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July 29, 2015

SUBMITTED ELECTRONICALLY

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Re: United States, et.al. v. BP products North America Inc.
Northern District of Indiana, Hammond Division
Civil Action No. 2:12 CV 207
LDAR Compliance Status Report – July 1, 2014, through June 30, 2015

In accordance with Part VIII of the referenced Consent Decree, please find enclosed the LDAR Compliance Status Report for the reporting period July 1, 2014, through June 30, 2015. The report is submitted pursuant to ¶ 34 and ¶ 35, of Appendix B, and is certified pursuant to ¶ 36 of Appendix B.

I certify under penalty of law that I have examined and am familiar with the information in the enclosed document(s), including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are, to the best of my knowledge and belief, true and complete. I am aware that there are significant penalties for knowingly submitting false statements and information, including the possibility of fines or imprisonment pursuant to Section 113(c)(3) of the Clean Air Act and 18 U.S.C. Sections 1001 and 1341.

If you require additional information, please contact Linda Wilson at (219) 473-3287.

Sincerely,

Jorge Lanza
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**LDAR COMPLIANCE STATUS REPORT
2014 - 2015 REPORTING YEARS**

JULY 1, 2014, TO JUNE 30, 2015

BP Whiting Refinery

SECTION 1: INTRODUCTION

The purpose of this document is to fulfill the requirements of Appendix B, ¶ 34 (Annual LDAR Reporting) and ¶ 22 of the BP Whiting 2012 Consent Decree. The reporting period covered herein is July 1, 2014, through June 30, 2015.

Section 2 of the report includes the reporting requirements under Appendix B, ¶ 34. The requirements under ¶ 34 are listed below:

- A. The number of personnel assigned to LDAR functions at the Whiting Refinery and the percentage of time each person dedicated to performing his/her LDAR functions;
- B. An identification and description of any non-compliance with the requirements of Appendix B;
- C. Identification of any problems encountered in complying with the requirements of Appendix B;
- D. The information required in Paragraph 20 of Appendix B;
 - 1. Identification of each valve for which compliance with the requirement to replace or repack the valve with a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology could not be met. These valves would be considered Commercially Unavailable valves. If Commercially Unavailability is claimed, documentation from the appropriate purchasing vendors, regarding unavailability, must be provided; and
 - 2. For any valve for which commercial unavailability is claimed, supply the report for the ongoing assessment of availability, provided that the previous determination was completed within the preceding 12-month period.
- E. A description of any LDAR training records required in accordance with Part I of this Appendix;
- F. Any deviations identified in the QA/QC performed under Appendix B, Part J, as well as any corrective actions taken;
- G. A summary of LDAR audit results including specifically identifying all deficiencies; and
- H. Status of all actions under a Corrective Action Plan (CAP) that was submitted pursuant to Part K, of Appendix B, during the reporting period.

Section 3 includes the reporting requirements under Appendix B, ¶ 22. The requirements under ¶ 22 are listed below:

The information required in Paragraph 22 of Appendix B, Valve Replacement/Improvement Report;

1. Actions taken to comply with Part G including identifying each valve that was replaced or upgraded.
2. Identification of the schedule for any future replacements or upgrades.

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SECTION 2: REPORT ON IMPLEMENTATION OF APPENDIX B OF THE CONSENT DECREE

Part N: Reporting, ¶ 34 Compliance Status Reports

On the dates and for the time periods set forth in Paragraph 35 of Appendix B, BPP shall submit, in the manner set forth in Section XVI (General Provisions) of the Consent Decree, a compliance status report regarding compliance with this ELP. The compliance status report shall include the following information:

A. CD Appendix B, Subparagraph 34.a: LDAR Personnel Summary

The number of personnel assigned to LDAR functions at the Whiting Refinery and the percentage of time each person dedicated to performing his/her LDAR functions.

The Job Title/Roles of the individuals with LDAR responsibilities at the Whiting Refinery have been provided in Table A-1. The table includes the individuals responsible for day-to-day LDAR compliance including, tagging, monitoring, administration, quality assurance, quality control, and Management of Change (MOC) LDAR reviews. A LDAR contractor was hired in 2014 to assist with the tagging of closed vent system components, which was primarily during the Second Half of 2014. Also, for February 2015 through May 2015 a LDAR contractor (i.e., LDAR technicians, coordinator, and supervisor) was hired to perform routine monitoring as the BP Environmental Technicians, whose duty it is to perform routine monitoring, were engaged in concerted activities for the purpose of collective bargaining and unable to perform said duty. The table below does not include individuals that are responsible for purchasing, operating, or maintaining LDAR equipment.

Table A-1: LDAR Personnel at Whiting Business Unit

Company	Number of Personnel	Job Title/Role	Time Dedicated (%)
BP	1	Environmental Manager	15
BP	1	Environmental Air Team Lead	30
BP	1	LDAR Coordinator	100
BP	1	LDAR Supervisor	95
BP	2	LDAR Clerk	90
BP	9	Environmental Technician	85
BP	4	Area Environmental Specialist	20

Company	Number of Personnel	Job Title/Role	Time Dedicated (%)
BP	1	HSSE Reporting Specialist	95
BP	1	BP Refining Environmental Advisor	20
Contractor	1	LDAR Supervisor	75
Contractor	2	Environmental Technician	80
Contractor	9	Environmental Technician	30
Contractor	2	LDAR QA/QC Auditor	5

B. CD Appendix B, Subparagraph 34.b - Non-Compliance with the Requirements of Appendix B.

An identification and description of any non-compliance with the requirements of Appendix B.

Table B-1 lists the instances of non-compliance with Appendix B. This table lists the requirement, the applicable CD citation(s), and a description of non-compliance over the reporting period.

Table B-1: Non-compliance and Issues Identified Complying with Appendix B

Requirement	CD Citation(s)	Description	Corrective Action
Monitoring Frequency	App B Paragraph 4	One (1) unit missed pump seal inspections for the week of July 6, 2014.	See Table F-7 for further details on corrective actions.
Monitoring Frequency	App B Paragraph 4	Nine (9) components were not monitored for two (2) consecutive months following a successful repair.	See Table F-6 for further details on corrective actions.
Method 21 Monitoring Requirements	App B Paragraph 6.a	Six (6) leak interfaces were missed during observations of LDAR technician (contractor and BP) implementation of EPA Method 21.	See Table F-9 for further details on corrective actions.
Method 21 Calibration Drift Assessment	App B Paragraph 7	One (1) calibration drift assessment was not performed after a reading of greater than 250 ppm was measured on a pump.	See Table F-7 for further details on corrective actions.

Requirement	CD Citation(s)	Description	Corrective Action
First Attempt Within 5 days	App B Paragraph 12	Eight (8) components did not have a first attempt completed within 5 days of leak discovery.	See Table F-5 for further details on corrective actions.
Final Repair Within 15 days	App B Paragraph 12	One (1) components did not have a final repair completed within 15 days of leak discovery.	See Table F-5 for further details on corrective actions.
Repair Verification Monitoring	App B Paragraph 13	Eleven (11) components did not receive Repair Verification Monitoring during the reporting period.	See Table F-3 for further details on corrective actions.
Certified Low-Leaking Valves	App B Paragraph 19.c(i)	Twenty-four (24) valves were potentially installed since July 1, 2014, are not on the Approved Manufacturer List, which contains all Certified Low-E Valves.	Refer to page 31 for more details regarding corrective actions.
Untagged Components	App B Paragraph 26.b	One hundred fifty-three (153) components were found untagged during the reporting period.	These valves were tagged, monitored, and added to the LeakDAS™ database. See Table F-1 and Table F-2 for further details on corrective actions.
DOR Forms	App B Paragraph 26.c.ii	Three DOR forms were signed late.	See Table F-4 for further details on corrective actions.

C. CD Appendix B, Subparagraph 34.c- Problems encountered in complying with Appendix B.

An identification of any problems encountered in complying with the requirements of this Appendix.

1. Problem: BP is having difficulty tracking the installation date of valves for the purpose of determining if a valve meets the requirements in ¶ 19.a.i of the Consent Decree. Currently, BP is only capable of determining when a valve is present in the refinery by the "Date Added" field, captured in the LeakDAS™ database, when an Environmental Technician tags the valve initially.

Solution: BP is currently exploring ways to better track valve installation with the LeakDAS™ database. The solution may require additional software modifications or enhancements to the Management of Change process.

2. Problem: BP is having difficulty tracking replacement valves for the purpose of identifying each valve that was replaced meeting the requirement in ¶ 19.a.ii of the Consent Decree. Currently, BP is only capable of tracking replaced valves that are leaking greater than 5,000 ppm.

Solution: BP is currently exploring ways to better track replaced valves that are not leaking greater than 5,000 ppm within the LeakDAS database. The solution may require additional software modifications or changes to Environmental Technician data entry procedures.

D. Summary of Low-Leaking Valve/Packing Technology Implementation

The information required in Paragraph 20 of Appendix B.

1. CD Appendix B, Paragraph 20.a - Commercially Unavailability Reporting

BPP shall not be required to utilize a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology to replace or repack a valve if a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology is commercially unavailable in accordance with the provisions in Part O of this Appendix. Prior to claiming this commercial unavailability exemption, BPP must contact a reasonable number of vendors of valves and obtain a written representation or equivalent documentation from each vendor that the particular valve that BPP needs is commercially unavailable either as a Certified Low-Leaking Valve or with Certified Low-Leaking Valve Packing Technology. In the Compliance Status Reports due under Part N of this Appendix, BPP shall:

- (i) Identify each valve for which it could not comply with the requirement to replace or repack the valve with a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology;
- (ii) Identify the vendors it contacted to determine the unavailability of such a Valve or Packing Technology; and
- (iii) Include the written representations or documentation that BPP secured from each vendor regarding the unavailability.

Pursuant to Appendix B Paragraph 20.a, WBU has identified three (3) new valve types in hydrocarbon service as commercially unavailable, pursuant to Appendix B Paragraph 20.a, during the reporting period. Documentation is provided in Attachment 1 as well as supplemental information required by Appendix B, Paragraph 38.

2. CD Appendix B, Paragraph 20.b - Ongoing Assessment of Availability

Ongoing Assessment of Availability. BPP may use a prior determination of Commercial Unavailability of a valve or valve packing pursuant to this Paragraph and Part O of this Appendix for a subsequent Commercial Unavailability claim for the same valve or valve packing (or valve or valve packing in the same or similar service), provided that the previous determination was completed within the preceding 12-month period. After one year, BPP must conduct a new assessment of the availability of a valve or valve packing meeting Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology requirements.

The ongoing annual assessment for four (4) valves, whose assessment due date was due during this reporting period, were completed on time. Attachment 2 contains copies of the re-assessed commercial unavailability forms.

E. CD Appendix B, Subparagraph 34.e - LDAR Training

A description of any LDAR training required in accordance with Part I (Subparagraph 24) of Appendix B.

CD Appendix B, Subparagraph 24 - Training

By no later than six (6) months after the Date of Entry, BPP shall have ensured that all employees and contractors responsible for LDAR monitoring, maintenance of LDAR monitoring equipment, LDAR repairs, and/or any other duties generated by the LDAR program have completed training on all aspects of LDAR that are relevant to the person's duties. By that same time, BPP shall develop a training protocol to ensure that refresher training is performed once per calendar year and that new personnel are sufficiently trained prior to any involvement in the LDAR program.

BP has insured that all employees and contractors responsible for LDAR monitoring, maintenance of LDAR monitoring equipment, LDAR repairs, and/or any other duties generated by the LDAR program have completed training on all aspects of LDAR that are relevant to the person's duties on the recurring schedule listed in Table E-1.

BP has developed training protocols for existing employees and has created an initial training course for all new employees. This information is detailed in Table E-1. The LDAR Courses shown in this table are dependent on the specific job function as it pertains to LDAR. BP employees are required to take their corresponding job-function LDAR training on an annual basis. In addition, contractors that are used for BP LDAR job functions; such as a LDAR Technician are require to take the Environmental Technician Environmental Training.

Table E-1: LDAR Training Course Descriptions

Title	LDAR Training Course Description	When
Initial LDAR Training for New Employees	Describes LDAR duties - Overview of LDAR, Regulated Equipment and Leak Rates, Tagging, Sensory Leaks, Delay of Repair, Certified Low Leak Requirements, Enhanced QA/QC	Provided on Hire Date to All New Employees
Engineering LDAR Training	<u>Engineering (Projects and Process) LDAR Training</u> <ul style="list-style-type: none"> • LDAR Overview • LDAR Regulations and LDAR Streams • Consent Decree Overview • LDAR Tagging and Monitoring • Repairs and Delay of Repair (DOR) • Low-Emission Technology and 5,000 ppm Leakers • Management of Change (MOC) • Sampling Systems • Open-ended Lines (OELs) • Stipulated Penalties 	By Computer Based Training Annually
Environmental Dept LDAR Training	<u>Environmental Dept LDAR Training</u> <ul style="list-style-type: none"> • Overview of LDAR • Identification of LDAR Equipment and Streams • LDAR Regulations • LDAR Team • MOC Process • Monitoring for Leaks (Method 21 and AVO) • Repair Process for Leaking Equipment (including DOR and Low-E) • Valve Replacement/Improvement • Open-Ended Lines (OELs) and Sample Stations • Difficult to Monitor (DTM) Components and Cap in New Units • LDAR Reporting and CD Stipulated Penalties • Roles and Responsibilities 	By Computer Based Training Annually

Title	LDAR Training Course Description	When
Environmental Technician LDAR Training	<p><u>Environmental Technician LDAR Training</u></p> <ul style="list-style-type: none"> • LDAR Overview • LDAR Regulations and Consent Decree • LDAR Team • Job Function • Low-Emission Valves/Valve Packing • Method 21 and Instrument Calibration Requirements • Repair Process for Leaking Equipment (including RVM, DOR, AVO) • Open-Ended Lines (OELs) • DTM and UTM Components • Management of Change (MOC) • LDAR Reporting and Documentation 	By Computer Based Training Annually
General Awareness LDAR Training - For Employees not Directly Impacted by LDAR	<p><u>General Awareness LDAR Training</u></p> <ul style="list-style-type: none"> • Overview of LDAR • Identification and Tagging of LDAR Equipment • Applicable LDAR Regulations and 2012 Consent Decree • Management of Change (MOC) Process • Sensory (Audio, Visual, or Olfactory, AVO) Leak Inspections • LDAR Monitoring • Repair Process for Leaking Equipment (and Repair Verification Monitoring) • Open-Ended Lines (OELs) • Routine Sampling • General Contractor LDAR Responsibilities 	By Computer Based Training Annually
HSSE Reporting Specialist and Environmental Consultant LDAR Training	<p><u>HSSE Reporting Specialist and Environmental Consultant LDAR Training</u></p> <ul style="list-style-type: none"> • Overview of LDAR • Identification of LDAR Equipment and Streams • LDAR Regulations and Consent Decree • LDAR Team • MOC Process • Monitoring for Leaks (Method 21 and AVO) • Repair Process for Leaking Equipment (Inc. DOR and Low-E) • Valve Replacement/Improvement • Open-Ended Lines (OELs) and Sample Stations • Difficult to Monitor (DTM) Components and Cap in New Units • LDAR Reporting and CD Stipulated Penalties • Roles and Responsibilities 	By Computer Based Training Annually

Title	LDAR Training Course Description	When
Maintenance LDAR Training	<p><u>Maintenance LDAR Training</u></p> <ul style="list-style-type: none"> • Overview of LDAR • Identification of LDAR Equipment and Streams • LDAR Regulations (including Consent Decree) • LDAR Team • MOC Process • Monitoring for Leaks (Method 21 and AVO) • Repair Process for Leaking Equipment • Delay of Repair (DOR) • 5,000 ppm Replacement/Repacks • Low-E Valves and Valve Packing • Open-Ended Lines (OELs) and Sample Stations • Roles and Responsibilities 	By Computer Based Training Annually
Operations LDAR Training	<p><u>Operations LDAR Training</u></p> <ul style="list-style-type: none"> • Overview of LDAR • Identification of LDAR Equipment and Streams • LDAR Team • MOC Process • Monitoring for Leaks (Method 21 and AVO) • Repair Process for Leaking Equipment and DOR • 5,000 ppm Valve Replacement/Repacking and Low-E • Open-Ended Lines (OELs) and Sample Stations • Difficult to Monitor (DTM) Components and Cap in New Units • LDAR Database and Reporting • Roles and Responsibilities 	By Computer Based Training Annually
Procurement LDAR Training	<p><u>Procurement LDAR Training</u></p> <ul style="list-style-type: none"> • BP Policy Change as per Steve Cornell • What is Low-E and Why is it Important to EPA? • Whiting Consent Decree and Low-E definition • Roles and Responsibilities • Low-E Valve Procurement Workflow • Whiting Consent Decree Procurement Requirements • Control Points for Procurement of Low-E Valves • Approved Manufacturers List (AML) and Process for Updating • Vendor/Supplier Obligations for Low-E Valves • Vendor/Supplier Reporting Requirements • SAP Items and Pricebooks • Procurement's Interface with Other Department 	By Computer Based Training Annually

Title	LDAR Training Course Description	When
Refinery Management LDAR Training	<u>Refinery Management LDAR Training</u> <ul style="list-style-type: none"> • LDAR Overview • Understanding of LDAR Regulations and Consent Decree requirements • Low-E Equipment and Requirements • LDAR Program Roles and Responsibilities • Title V Deviations • Consent Decree Stipulated Penalties 	By Computer Based Training Annually
Storehouse LDAR Training	<u>Storehouse LDAR Training</u> <ul style="list-style-type: none"> • Understanding of LDAR Regulations and CD requirements • Low-E Equipment and Requirements • Roles and Responsibilities • Approved Manufacturers List (AML) and Process for Updating • Vendor/Supplier Obligations for Low-E Valves • Storehouse Quality Assurance (QA) / Quality Control (QC) 	By Computer Based Training Annually
TAR Planning LDAR Training	<u>TAR Planning LDAR Training</u> <ul style="list-style-type: none"> • LDAR Overview • LDAR Component Identification • Consent Decree Requirements • Monitoring • Repairs and Delay of Repair (DOR) • Low-Emission Valves and Valve Packing • 5,000 ppm Leakers and 30 Day DOR • Management of Change (MOC) • Open-ended Lines (OELs) • Difficult to Monitor (DTM) Components • TAR Requirements and Lessons 	By Computer Based Training Annually

F. CD Appendix B, Subparagraph 34.f - Deviations identified in Quarterly QA/QC Review

Any deviations identified in the QA/QC performed under Part J of this Appendix B, as well as any corrective actions taken under that Part;

During the reporting period, an LDAR trained contractor conducted the review of the MOC documentation in the Third and Fourth Quarters of 2014 and the First and Second Quarters of 2015. The following sections contain details from these reviews.

CD Appendix B Part J, Subparagraph 26.a - Review of MOC Documentation

Commencing by no later than the first full calendar quarter after the Date of Entry, during each calendar quarter, at unannounced times, an LDAR trained employee or contractor of BPP, who does not serve as an LDAR monitoring technician on a routine basis, shall undertake the following:

Review Management of Change documentation for the previous calendar quarter, and conduct process unit walk-throughs to determine whether all pieces of Equipment identified in the previous calendar quarter's Management of Change documentation as being subject to the LDAR program are included in the LDAR database and are properly tagged;

The following deviations were identified under Subparagraph 26.a and are included below in Table F-1.

Table F-1: Deviations from MOC Reviews

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Overlooked Components: Nine (9) valves are overlooked on 20" wet gas line between F-4 and F-5.	These valves were tagged, monitored, and added to the LeakDAS TM database.	10/06/2014	3Q2014
Overlooked Components: ERM reviewed nine (9) valves added and tagged. One (1) low bleeder valve was under water and not tagged, near tag number 401215.	This valve was tagged, monitored, and added to the LeakDAS TM database.	03/31/2015	4Q2014
Overlooked Components: Eighteen (18) valves from six (6) MOC packages were not tagged.	MOC review and tagging processes were reviewed and are undergoing updates to insure initial tagging and monitoring is completed within the required timeframes.	Initial implementation 07/2015; ongoing staged implementation	1Q2015
Overlooked Components: Twenty-seven (27) valves and three (3) bleeders from five (5) MOC packages were not tagged.	MOC review and tagging processes were reviewed and are undergoing updates to insure initial tagging and monitoring is completed within the required timeframes.	Initial implementation 07/2015; ongoing staged implementation	2Q2015

The following findings were identified during audits under Subparagraph 26.a, subsequently reviewed and found to be in compliance with applicable requirement, and are included below in Table F-2.

Table F-2: Findings from MOC Reviews Confirmed Not to be Deviations

Findings	Review Results	Review Completion Date	Quarter Reviewed Conducted
Overlooked Component: One (1) valve with Argu actuator HAVC23832A is overlooked on horizontal section of outlet piping underneath D-803.	Tag was found to be under insulation and LeakDAS TM database review revealed no compliance issues.	10/06/2014	3Q2014
Overlooked Components: ERM reviewed four (4) valves and one (1) injection pump not tagged on Tank 51334. Material in the tank was BPR 81880 Neutralizer; the MOC package stated the material was a light liquid with an in-service date of April 28, 2014.	Components were found to be tagged as required for compliance. Tag numbers are 402837, 403578, 402752, 402847, and 403857.	03/24/2015	4Q2014
Overlooked Components: ERM reviewed four (4) valves not tagged, located on same line downstream of tag numbers 383077 through 383088.	These valves were verified to be already tagged and monitored.	03/29/2015	4Q2014

CD Appendix B Part J, Subparagraph 26.b - Process Unit Walk-Throughs

During the process unit walk-throughs required by subparagraph 26.a, and during such additional walk-throughs as may be necessary to assure that all Covered Process Units are reviewed at least once per year, conduct spot checks of Equipment to verify that the Equipment checked is included in the LDAR database and is properly tagged.

The following deviations were identified under Subparagraph 26.b and is included below in Table F-3: Deviations from Process Unit Walk-Throughs.

Table F-3: Deviations from Process Unit Walk-Throughs

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Review Conducted
Open-Ended Line: One (1) open-ended line was discovered at the Marketing Terminal.	The valve was plugged.	11/30/2014	4Q2014
Untagged Component: One (1) component in Steiglitz Park Tank Field was found to be untagged.	This valve was tagged and added to the LeakDAS TM database.	12/23/2014	4Q2014
Untagged Components: Eleven (11) components in the Distillate Desulfurizer Unit were found to be untagged.	These valves were tagged and added to the LeakDAS TM database.	11/30/2014	4Q2014
Untagged Components: Forty-five (45) valves from process unit walkthroughs were found not tagged.	MOC review and tagging processes were reviewed and are undergoing updates to insure initial tagging and monitoring is completed within the required timeframes.	Initial implementation 07/2015; ongoing staged implementation	1Q2015
Untagged Components: Twenty-eight (28) valves from process unit walkthroughs were found not tagged.	MOC review and tagging processes were reviewed and are undergoing updates to insure initial tagging and monitoring is completed within the required timeframes.	Initial implementation 07/2015; ongoing staged implementation	2Q2015

The following findings were identified during audits under Subparagraph 26.b, subsequently reviewed and found to be in compliance with applicable requirement, and are included below in Table F-4.

Table F-4: Findings from Process Unit Walk-Throughs Confirmed Not to be Deviations

Findings	Review Results	Review Completion Date	Quarter Reviewed Conducted
Overlooked Valves: One (1) overlooked component on pressure reading line off P06157, North side of tower E-1, floor 95.	Tag was found to be under insulation and LeakDAS TM database review revealed no compliance issues.	10/06/2014	3Q2014

Findings	Review Results	Review Completion Date	Quarter Reviewed Conducted
<p>Overlooked Valves: One (1) overlooked valve. The valve with a handle that has a logo stating "orifice" is not tagged. A valve is on the same line as tag 314750 (which is listed in LeakDAS as Fuel Gas service). The untagged valve is potentially tag number 314749, but LeakDAS description does not match. Tag 314749 is a 0.75" Smith (NLT), North of E-1, floor 36, in fuel gas service.</p>	<p>Tag was found to be under insulation and LeakDAS™ database review revealed no compliance issues.</p>	<p>10/06/2014</p>	<p>3Q2014</p>
<p>Overlooked Valves: One (1) overlooked valve: A 2" block valve on level gauge near tags 324649 and 324650 is not tagged. LeakDAS tags 324648 and 324651 are in different units.</p>	<p>Tag was found to be untagged because the tag fell off. It was retagged (402387) and LeakDAS™ database review revealed no compliance issues.</p>	<p>10/06/2014</p>	<p>3Q2014</p>
<p>Possible Heavy Liquid Component: A tag was found on a component and no other equipment around it was tagged. Tag number was 289915 and location was near JP-8 Coalescer in Indiana Tank Field</p>	<p>It was confirmed that JP-8 Coalescer is permanently removed from service and tag 289915 was removed from the equipment.</p>	<p>03/24/2015</p>	<p>4Q2014</p>
<p>AVO Leak: One (1) visual leak was found on a valve at the Asphalt Unit/Marine Dock Facility.</p>	<p>Component was monitored and found not to be leaking.</p>	<p>01/12/2015</p>	<p>4Q2014</p>
<p>AVO Leak: One (1) visual leak was found on a valve in 11A Pipestill.</p>	<p>Component was monitored and found not to be leaking.</p>	<p>03/01/2015</p>	<p>1Q2015</p>
<p>AVO Leak: One (1) visual leak was found on a valve in 11C Pipestill.</p>	<p>Component was monitored and found not to be leaking.</p>	<p>02/24/2015</p>	<p>1Q2015</p>
<p>AVO Leak: One (1) visual leak was found on a valve in the J&L Tank Field.</p>	<p>Component was monitored and found not to be leaking.</p>	<p>03/16/2015</p>	<p>1Q2015</p>

Findings	Review Results	Review Completion Date	Quarter Reviewed Conducted
AVO Leak: One (1) visual leak was found on a check valve in Lake George Tank Field.	Component was monitored and found not to be leaking.	06/03/2015	2Q2015

CD Appendix B Part J, Subparagraph 26.c(i) - LDAR Database Reviews

Review the LDAR database to: Verify that Covered Equipment was monitored at the appropriate frequency.

The following deviations were identified under Subparagraph 26.c.i and are included below in Table F-5.

Table F-5: Deviations from LDAR Database Review

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Repair Verification Monitoring Completion: Eleven (11) missed repair verification monitoring events were identified during 3Q2014.	Determine if improvements can be made to distribution lists to prevent communication mishaps.	10/31/2014	3Q2014
Twice Monthly Monitoring: Eight (8) components were not monitored successively for two (2) months following repair attempts.	Back-end queries and routing procedures were updated to catch components requiring monitoring for two consecutive months.	04/30/2015	1Q2015
Twice Monthly Monitoring: One (1) component was not monitored successively for two (2) months following a repair attempt.	Reconcile the mismatch report in the LeakDAS database to insure that all valves have their scheduled monitoring events at the end of each month and each quarter and to identify any components have not been monitored according to their scheduled frequencies.	Projected 07/31/2015	2Q2015

The following findings were identified during audits under Subparagraph 26.c.i, subsequently reviewed and found to be in compliance with applicable requirement, and are included below in Table F-6.

Table F-6: Findings from LDAR Database Review Confirmed Not to be Feviations

Findings	Review Results	Review Completion Date	Quarter Reviewed Conducted
Monthly Monitoring of Component: One (1) valve, 401245, was not monitored in the month of September 2014.	This tag was confirmed to be subject to only annual Method 21 monitoring. No corrective action taken.	03/10/2015	4Q2014
Monthly Monitoring of Delay of Repair Component: One (1) valve, 308037, was not monitored in the month of September 2014, while on delay of repair.	This tag was confirmed to be temporarily unsafe to monitor as of March 2014. No corrective action taken.	03/10/2015	4Q2014
Twice Monthly Monitoring: Two (2) components were not monitored successively for two (2) months following repair attempts.	These two components are difficult to monitor and are not subject to consecutive follow-up monitoring.	03/10/2015	4Q2014

CD Appendix B Part J, Subparagraph 26.c(ii) - DOR Sign-Offs

Verify that proper documentation and sign-offs have been recorded for all Covered Equipment placed on the shutdown or DOR list.

The following deviations were identified under Subparagraph 26.c.ii and are included below in Table F-7.

Table F-7. Deviations from LDAR Records Review

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Late DOR Sign-Off: Two (2) components had DOR forms that were signed late.	DOR forms were signed and enhanced communications are implemented to prevent future late DOR signings.	04/30/2015	1Q2015

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Late DOR Sign-Off: One (1) component had a DOR form that was signed late.	The DOR process was reviewed and is undergoing updates to insure DOR forms are signed within the required timeframes.	Initial implementation 07/2015; ongoing staged implementation	2Q2015

CD Appendix B Part J, Subparagraph 26.c(iii) - Repairs Completed on Time

Ensure that repairs have been performed within the required timeframe.

The following deviations were identified under Subparagraph 26.c.iii and are included below in Table F-8.

Table F-8: Deviations from Repair Requirements

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Late First Attempt: One (1) component (284658) was identified that did not have a first attempt completed within 5 days of leak discovery.	The first repair attempt was conducted.	06/18/2014	3Q2014
Late Final Repair: One (1) component (270898) was identified that did not have a final repair completed within 15 days of leak discovery, which occurred on November 3, 2014.	Enhanced communications are implemented to prevent future late repairs.	04/30/2015	1Q2015
Late First Attempt: One (1) component (302546) was identified that did not have a first attempt completed within 5 days of leak discovery, which occurred on November 7, 2014.	Enhanced communications are implemented to prevent future late repairs.	04/30/2015	1Q2015

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Late First Attempts: Six (6) components (A01222, A01224, 319181, 256652, 256653, and 256654) were identified that did not have first attempts completed within 5 days of leak discovery, which occurred on January 13, 2015 (3 components) and January 28, 2015 (3 components).	Enhanced communications are implemented to prevent future late repairs.	04/30/2015	2Q2015

CD Appendix B Part J, Subparagraph 26.c(iv) - Review of Monitoring Data and Covered Equipment Counts

Review monitoring data and Covered Equipment counts (e.g., number of pieces of Covered Equipment monitored per Day) for feasibility and unusual trends.

The following deviations were identified under Subparagraph 26.c.iv and are included below in Table F-9.

Table F-9: Deviations from Monitoring Data Review

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Time Accountability: ERM identified seven (7) events where the dwell time or total monitoring time was less than the typical instrument response time.	Refresher training was provided to the technicians regarding dwell and response times necessary to prevent these time discrepancies.	04/04/2015 and 05/20/2015	2Q2015
Size Accountability: ERM identified six (6) events where the survey rate exceeded 3.0 inches per second.	Refresher training was provided to the technicians regarding dwell and response times necessary to prevent these time discrepancies.	04/04/2015 and 05/20/2015	2Q2015

The following findings were identified during audits under Subparagraph 26.c.iv, subsequently reviewed and found to be in compliance with applicable requirement, and are included below in Table F-10.

Table F-10: Findings from Monitoring Data Review confirmed not to be deviations

Findings	Review Results	Review Completion Date	Quarter Reviewed Conducted
Time Accountability: ERM identified one (1) event where the dwell time or total monitoring time was less than the typical instrument response time.	This component is a plug and is not subject to these same size or time accountability metrics.	11/21/2014	4Q2014
Size Accountability: ERM identified seven (7) events where the survey rate exceeded 3.0 inches per second.	Six (6) of these components were determined to be only regulated by the Benzene Waste Organic NESHAP regulations and is outside the scope of the quarterly audits. One (1) component is a plug and is not subject to these size or time accountability metrics.	11/21/2014	4Q2014
Size Accountability: ERM identified one (1) event where the survey rate exceeded 3.0 inches per second.	This component was determined to be only regulated by the Benzene Waste Organic NESHAP regulations and is outside the scope of the quarterly audits.	03/31/2015	1Q2015

CD Appendix B Part J, Subparagraph 26.c (v) - Verification of Calibration Records

Verify that proper calibration records and monitoring instrument maintenance information are stored and maintained.

The following deviations were identified under Subparagraph 26.c.v, Verification of Calibration Records and are included below in Table F-11.

Table F-11: Deviations from Calibration Records Review

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Calibration Drift Assessment: An end of shift calibration drift assessment was not performed on November 6, 2014, when monitoring was performed on pump that measured greater than 250 ppmv.	Refresher training was provided to the technicians regarding drift assessments required when components have readings above a particular threshold.	04/04/2015 and 05/20/2015	1Q2015

CD Appendix B Part J, Subparagraph 26.d - Spot Checks of LDAR Program Records

Conduct spot checks of LDAR program records to verify that those records are maintained as required.

The following deviations were identified under Subparagraph 26.d, Spot Checks of LDAR Program Records and are included below in Table F-12.

Table F-12: Deviations from Spot Checks of LDAR Program Records

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Incorrect DTM Classification: Twelve (12) components were placed on delay of repair and did not have proper weatherproof tagging. Furthermore, one (1) of these valves was associated with a site-glass that appears to be isolatable without affecting the operation of the drum to which it is associated.	Hang weatherproof tags on the DOR components that are still in service.	10/06/2014	3Q2014

The following findings were identified during audits under Subparagraph 26.d, subsequently reviewed and found to be in compliance with applicable requirement, and are included below in Table F-13.

Table F-13: Findings from Spot Checks of LDAR Program Records Confirmed Not to be Deviations

Findings	Review Results	Review Completion Date	Quarter Reviewed Conducted
Missed Weekly Pump Seal Inspection: One (1) unit, 12PS, has a missing pump seal inspection, for the week of July 6, 2014, that cannot be confirmed from the records reviewed.	Pump seal inspections were determined not to be missed.	10/20/2014	3Q2014
Incorrect DTM Classification: Two (2) components are designated as UTM, but have inspection histories. This includes two (2) valves (274609 and 295650).	Further review of the database revealed that these tags have been out of service since late 2013.	09/30/2014	3Q2014

CD Appendix B Part J, Subparagraph 26.e - LDAR Monitoring Technician Observations

Observe each LDAR monitoring technician in the field to ensure monitoring is being conducted as required.

Table F-14 contains deviations identified under Subparagraph 26.e, LDAR Monitoring Technician Observations.

Table F-14: Deviations from LDAR Monitoring Technician Observations

Deviation	Corrective Action	Corrective Action Completion Date	Quarter Reviewed Conducted
Technician Observations: One (1) Environmental Technician was observed to improperly implement EPA Method 21 during monitoring of one (1) pump by not monitoring all leak interfaces.	Technician has been re-trained on EPA Method 21 and leak interfaces associated with pumps.	09/30/2014	3Q2014

<p>Daily Calibration Records: Daily calibration records indicate that monitoring technicians utilize extension probes when performing daily monitoring activities. However, no records are available for separate response time tests or daily calibration checks on days when extension probes were used by various monitoring technicians.</p>	<p>Refresher training was provided to the technicians regarding the use of extension probes and the calibration requirements for their use.</p>	<p>11/21/2014</p>	<p>4Q2014</p>
<p>Technician Observations: During observations of technician monitoring techniques, it was observed that two (2) out of nine (9) environmental technicians did not monitor one (1) potential leak interfaces on a ball valve, which included the threaded gasket seam. This resulted in two (2) missed valve monitoring interfaces out of a total of approximately 150 valve interfaces (1.3%) observed during technician observations.</p>	<p>Refresher training was provided to the technicians regarding the potential leak interfaces that exist with certain types of ball valves.</p>	<p>11/21/2014</p>	<p>4Q2014</p>
<p>Daily Calibration Records: Daily calibration records indicate that monitoring technicians utilize extension probes when performing daily monitoring activities. However, no records are available for separate response time tests or daily calibration checks on days when extension probes were used by various monitoring technicians.</p>	<p>Refresher training was provided to the technicians regarding the use of extension probes and the calibration requirements for their use.</p>	<p>04/04/2015 and 05/20/2015</p>	<p>1Q2015</p>

<p>Daily Calibration Records: Daily calibration records indicate that monitoring technicians utilize extension probes when performing daily monitoring activities. However, no records are available for separate response time tests or daily calibration checks on days when extension probes were used by various monitoring technicians.</p>	<p>Conduct refresher training for LDAR monitoring technicians on EPA Method 21 response time test requirements for changes in instrument configurations.</p>	<p>05/20/2015</p>	<p>2Q2015</p>
<p>Technician Observations: During observations of technician monitoring techniques, the audit team observed that one (1) out of five (5) environmental technicians did not monitor one (1) potential leak interfaces on one (1) valve which included the bonnet on a valve located under grating.</p>	<p>Provide refresher training to LDAR monitoring technicians on EPA Method 21 monitoring requirements; emphasizing equipment leak interfaces to monitor.</p>	<p>05/20/2015</p>	<p>2Q2015</p>
<p>Technician Observations: During observations of technician monitoring techniques, the audit team observed that one (1) out of five (5) environmental technicians did not monitor two (2) potential leak interfaces on a pump which included the pump housing and a threaded connection on the pump seal.</p>	<p>Provide refresher training to LDAR monitoring technicians on EPA Method 21 monitoring requirements; emphasizing equipment leak interfaces to monitor.</p>	<p>05/20/2015</p>	<p>2Q2015</p>

G. CD Appendix B, Subparagraph 34.g - 3rd Party LDAR Audit Results

A summary of LDAR audit results including specifically identifying all deficiencies.

The 3rd Party Consent Decree LDAR Audit was initiated on September 8, 2014, and completed on January 6, 2015. The 3rd Party LDAR Audit results, including the citation and a description of any findings have been included below in Table G-1. Please note that the LDAR Audit Summary Report is included in Attachment 3.

Table G-1: 3rd Party Audit Findings

Finding No.	Citation	Description of Findings
1	40 CFR §60.482-7a(c)(1)	Records indicated that follow-up monitoring of one (1) repaired valve was not consistently conducted for the two successive months after final repair. Records also noted that one (1) valve was not consistently monitored monthly while on delay of repair.
2	40 CFR §60.485a(b)(1) and 40 CFR 60 Appendix, U.S. EPA Method 21, Section 8.3.1.3	During observations of technician monitoring techniques, the audit team observed that three (3) out of nine (9) environmental technicians did not monitor three (3) potential leak interfaces on three (3) valves, which included the gasket seams on a ball valve, the stem on a needle valve, and the bottom plug on a control valve. This resulted in three (3) missed valve monitoring interfaces out of a total of approximately 170 valve interfaces (2%) observed during technician observations.
3	40 CFR §60.485a(b)(1), Method 21, Section 8.1.3 and 10.1	Daily calibration records indicate that monitoring technicians utilize extension probes when performing daily monitoring activities. However, no records are available for separate response time tests or daily calibration checks on days when extension probes were used by various monitoring technicians.
4	40 CFR §60.486a(c)	The justification for delay of repair for one component was not signed within 15 days of the leak.
5	40 CFR §60.486a(f)	Approximately 20% of the valves the refinery had designated as difficult to monitor (DTM) did not specify a reason in the LDAR database.
6	Paragraph 19(d)	One record indicates that a valve was not placed on the Low-E delay of repair list within 30 days.

Finding No.	Citation	Description of Findings
7	Paragraph 29(a)	Comparative monitoring results of valves in the 12PS Unit covered process unit measured a Comparative Monitoring Leak Ratio of 3.6 times the refinery's historic average leak percentage from prior periodic monitoring events at a 500-ppm leak definition during the previous two monitoring periods, a margin that exceeds the 3.0 Comparative Monitoring Leak Ratio Limit identified in Paragraph 31.a. The Comparative Monitoring Leak Ratio was less than 3.0 in the two other units surveyed.

H. CD Appendix B, Subparagraph 34.h - Corrective Action Plan (CAP) Status

The status of all actions under any CAP that was submitted pursuant to Part K of this Appendix during the reporting period.

A CAP status update was submitted on May 4, 2015 in conjunction with the 3rd Party LDAR Audit, which commenced on September 8, 2014. The CAP submittal was due 120 days after the audit completion date, i.e., January 6, 2015. Therefore, the CAP submittal was due on May 6, 2015.

Table H-1: CAP Status

Finding No.	Corrective Action	Status Update
1	Evaluate back-end queries to insure they are catching components that have (1) missed two consecutive months of monitoring after a repair and (2) not been monitored for the month they are on DOR.	This corrective action was completed on March 10, 2015.

Finding No.	Corrective Action	Status Update
2 and 3	Provide refresher training to LDAR monitoring technicians on EPA Method 21 monitoring requirements, emphasizing equipment leak interfaces to monitor and response time test requirements for changes in instrument configurations.	This corrective action was completed on April 4, 2015, for contract workers who performed LDAR monitoring. Completed on May 20, 2015, for BP employees whose duty it is to perform LDAR monitoring and were engaged in concerted activities for the purpose of collective bargaining prior to the training date.
4 and 6	Implement enhanced communication for leaks near repair deadline to insure DOR timing requirement are understood.	This corrective action was completed on April 9, 2015.
7	It was noted that there is an amendment to United States, et.al. v. BP Products North America, Inc., et. al.; Northern District of Indiana, Hammond Division; Civil Action No. 2:12 CV 207 (Consent Decree), awaiting approval which would allow for a second criterion for development of a CAP, which includes a comparative monitoring audit leak percentage of 0.5% or greater.	The First Amendment to the CD was filed April 3, 2015, and includes the updated criterion for CAP development based on comparative monitoring results.

SECTION 3: VALVE REPLACEMENT/IMPROVEMENT REPORT

CD Appendix B, Paragraph 19.a(i) - Purchasing Procedures

BPP shall implement modified purchasing procedures that evaluate the availability of valves and valve packing that meet the requirements for a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology at the time that the valves and/or valve packing is acquired.

BP continues to use purchasing procedures to evaluate the availability of valves/valve packing material that meet the requirements of a Certified Low-Leaking Valve/Valve Packing at the time the valve/valve packing material is acquired.

CD Appendix B, Paragraph 19.a(ii) - Installation of Certified Low-Leaking Valve Packing

Except as provided in Paragraph 20 (Commercial Unavailability of Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology), BPP shall install valve packing material that meets the requirements for Certified Low-Leaking Valve Packing Technology whenever repacking any valve in gas/vapor or light liquid VOC service in a Covered Process Unit.

There were no valves repacked during this reporting period.

CD Appendix B, Paragraph 19.b - Certified Low Leaking Valve Purchasing Requirements

By no later than 90 days after the Date of Entry (except as provided in Paragraph 20), BPP shall ensure that each new valve in gas/vapor or light liquid VOC service that it purchases for use in any Covered Process Unit either is a Certified Low-Leaking Valve or is fitted with Certified Low-Leaking Valve Packing Technology.

BP continues to use an approved valve manufacturer list and follow BP Procurement procedures.

CD Appendix B, Paragraph 19.c - Installed Valves Must Be Certified Low Leaking

By no later than the dates specified below (except as provided in Paragraph 20), BPP shall ensure that each new valve in gas/vapor or light liquid VOC service that it installs in any Covered Process Unit either is a Certified Low-Leaking Valve or is fitted with Certified Low-Leaking Valve Packing Technology:

- (i) For all Process Units other than the new Coker and the new GOHT, by no later than 18 months after Date of Entry; and
- (ii) For the new Coker and the new GOHT, by no later than 24 months after Date of Entry.

Since July 1, 2014, BP has determined, through field review of newly added tags, twenty-four (24) valves were installed after the compliance date and that they are potentially not on the Approved Manufacturer List, which contains all Certified Low-E valves certified for use at the refinery. BP is

currently investigating each component to determine if they were either (1) actually installed prior to the compliance date (refer to Problem 9 in Section 2.C) or (2) meet the requirements of ¶ 19.c.i as being Certified Low-E valves.

CD Appendix B, Paragraph 19.d - Replacing/Repacking Valves Above 5,000 ppm

Replacing or Repacking Existing Valves that have Screening Values At or above 5,000 ppm. Except as provided in Paragraph 20, for each Existing Valve in each Covered Process Unit that has a Screening Value at or above 5,000 ppm during any monitoring event, BPP shall replace or repack the Existing Valve with a Certified Low-Leaking Valve or with Certified Low-Leaking Valve Packing Technology. BPP shall undertake this replacement or repacking by no later than 30 days after the monitoring event that triggers the replacement or repacking requirement, unless the replacement or repacking requires a process unit shutdown. If the replacement or repacking requires a process unit shutdown, BPP shall undertake the replacement or repacking during the Maintenance Shutdown that follows the monitoring event that triggers the requirement to replace or repack the valve. If BPP completes the replacement or repacking within 30 days of detecting the leak, BPP shall not be required to comply with Part E of this Appendix. If BPP does not complete the replacement or repacking within 30 days, or if, at the time of the leak detection, BPP reasonably can anticipate that it might not be able to complete the replacement or repacking within 30 days, BPP shall comply with all applicable requirements of Part E of Appendix B.

There were no valves that had screening values above 5,000 ppm that were replaced or repacked during this reporting period.

CD Appendix B, Paragraph 20.a - Commercial Unavailability of Certified Low Leaking Valves/Valve Packing

Commercial Unavailability of a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology.

BPP shall not be required to utilize a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology to replace or repack a valve if a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology is commercially unavailable in accordance with the provisions in Part O of this Appendix. Prior to claiming this commercial unavailability exemption, BPP must contact a reasonable number of vendors of valves and obtain a written representation or equivalent documentation from each vendor that the particular valve that BPP needs is commercially unavailable either as a Certified Low-Leaking Valve or with Certified Low-Leaking Valve Packing Technology. In the Compliance Status Reports due under Part N of this Appendix, BPP shall:

- (i) Identify each valve for which it could not comply with the requirement to replace or repack the valve with a Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology;
- (ii) Identify the vendors it contacted to determine the unavailability of such a Valve or Packing Technology; and
- (iii) Include the written representations or documentation that BPP secured from each vendor regarding the unavailability.

Pursuant to Appendix B Paragraph 20.a, WBU has identified three (3) new valve types in hydrocarbon service as commercially unavailable, pursuant to Appendix B Paragraph 20.a, during the reporting period. In addition to the attached documentation provided in Attachment 1, below is supplemental information as required in Appendix B, Paragraph 38.

CD Appendix B, Paragraph 20.b - Ongoing Assessment of Availability

Ongoing Assessment of Availability. BPP may use a prior determination of Commercial Unavailability of a valve or valve packing pursuant to this Paragraph and Part O of this Appendix for a subsequent Commercial Unavailability claim for the same valve or valve packing (or valve or valve packing in the same or similar service), provided that the previous determination was completed within the preceding 12-month period. After one year, BPP must conduct a new assessment of the availability of a valve or valve packing meeting Certified Low-Leaking Valve or Certified Low-Leaking Valve Packing Technology requirements.

The ongoing assessment was completed for the four (4) previously identified valve types in hydrocarbon service that are commercially unavailable. Pursuant to Appendix B Paragraph 20.b, the updated documentation is included in Attachment 2.

CD Appendix B, Paragraph 21.b - Records of Certified Low Leaking Valves/Packing

Records of Certified Low-Leaking Valves and Certified Low-Leaking Valve Packing Technology. Prior to installing any Certified Low- Leaking Valves or Certified Low-Leaking Valve Packing Technology, BPP shall secure from each manufacturer documentation that demonstrates that the proposed valve or packing technology meets the definition of “Certified Low-Leaking Valve” and/or “Certified Low-Leaking Valve Packing Technology.” BPP shall retain that documentation for the duration of this Consent Decree and make it available upon request.

BP has secured documentation from all valve manufactures that are on the approved valve manufacturer list and is maintaining and periodically updating that documentation. Purchasing is only allowed to purchase from a listing of valve manufacturer/valve types that are included on this list.

CD Appendix B, Paragraph 22(i) - Low-Leaking Valve/Packing Technology Installation Reporting

Valve Replacement/Improvement Report. In each Compliance Status Report due under Part N of Appendix B shall include a separate section in the Report that describes the actions it took to comply with Part G (§ 19 - Valve Replacement/Improvement Program), including identifying each valve that was replaced or upgraded.

Section 3 of this report describes the actions taken to comply with the valve replacement/improvement program.

CD Appendix B Paragraph 22 (ii) - Future Valve Replacements/Upgrades

Identifies the schedule for any future replacements or upgrades.

Table 3-1 lists the currently anticipated schedule for future valve replacements or improvements.

Table 3-1: Schedule for Future Valve Replacements

Unit	Tag	Next Planned Maintenance Shutdown Date
11APS	333152	2015
11APS	333620	2015
11APS	333706	2015
11APS	333709	2015
11APS	333796	2015
11APS	350506	2016
11CPS	329806	2016

Unit	Tag	Next Planned Maintenance Shutdown Date
11CPS	329822	2016
11CPS	329968	2016
11CPS	339772	2016
11CPS	342476	2016
11CPS	367572	2016
12PS	391309	2019
3SPS	322333	2015
3SPS	324478	2015
3SPS	324784	2015
3SPS	324819	2015
3SPS	342653	2015
3SPS	343684	2015
3SPS	359289	2015
4UF	304776	2016
4UF	304959	2016
4UF	304960	2016
4UF	304961	2016
4UF	305034	2016
4UF	305345	2016
4UF	305618	2016
4UF	309013	2016
4UF	309131	2016
4UF	315420	2016
4UF	315705	2016
4UF	315707	2016
4UF	315978	2016
4UF	316049	2016
4UF	316075	2016
4UF	316090	2016
4UF	316173	2016
4UF	316232	2016
4UF	319181	2016
4UF	321313	2016
4UF	321324	2016
4UF	321983	2016
4UF	323526	2016
4UF	325544	2016
4UF	332209	2016
4UF	339662	2016
4UF	340019	2016
4UF	340432	2016

Unit	Tag	Next Planned Maintenance Shutdown Date
4UF	363315	2016
4UF	363361	2016
4UF	363542	2016
4UF	363577	2016
4UF	363624	2016
4UF	363706	2016
4UF	363719	2016
4UF	364056	2016
4UF	364510	2016
4UF	375395	2016
4UF	398841	2016
4UF	398901	2016
4UF	398904	2016
ALKY	275886	2016
ALKY	275888	2016
ALKY	276641	2016
ALKY	276651	2016
ALKY	276674	2016
ALKY	276783	2016
ALKY	276809	2016
ALKY	277206	2016
ALKY	277308	2016
ALKY	277401	2016
ALKY	277443	2016
ALKY	277592	2016
ALKY	278366	2016
ALKY	278464	2016
ALKY	279124	2016
ALKY	279378	2016
ALKY	279572	2016
ALKY	279601	2016
ALKY	279677	2016
ALKY	279689	2016
ALKY	279772	2016
ALKY	279946	2016
ALKY	279977	2016
ALKY	280589	2016
ALKY	280699	2016
ALKY	280700	2016
ALKY	280821	2016
ALKY	286295	2016

Unit	Tag	Next Planned Maintenance Shutdown Date
ALKY	286611	2016
ALKY	286612	2016
ALKY	286644	2016
ALKY	293576	2016
ALKY	297858	2016
ALKY	361898	2016
ALKY	362724	2016
ALKY	373243	2016
ALKY	374389	2016
ALKY	374643	2016
ALKY	398003	2016
ALKY	398004	2016
ALKY	402742	2016
ANLZR	344656	2016
ARU	267950	2016
ARU	267979	2016
ARU	268746	2016
ARU	268856	2016
ARU	268874	2016
ARU	268883	2016
ARU	268932	2016
ARU	268935	2016
ARU	269117	2016
ARU	269253	2016
ARU	269279	2016
ARU	269280	2016
ARU	269281	2016
ARU	273220	2016
ARU	312216	2016
ARU	339491	2016
BOU	266568	2016
BOU	271320	2016
BOU	345234	2016
BOU	361644	2016
BOU	400052	2016
CFU	323470	2017
CFU	328272	2017
CFU	328394	2017
CFU	328779	2017
CFU	331028	2017
CFU	331073	2017

Unit	Tag	Next Planned Maintenance Shutdown Date
CFU	331179	2017
CFU	331726	2017
CFU	335242	2017
CFU	337264	2017
CFU	337292	2017
CFU	337424	2017
CFU	360387	2017
COKER2	383628	2019
COKER2	387622	2019
COKER2	395659	2019
COKER2	401019	2019
COKER2	403212	2019
CRU	291369	2015
CRU	291882	2015
CRU	293848	2015
CRU	294073	2015
CRU	294158	2015
DDU	319860	2016
DDU	337428	2016
DDU	366476	2016
DDU	368655	2016
DDU	368667	2016
DHT	267299	2017
DHT	267399	2017
DHT	343232	2017
FCU5	259305	2016
FCU5	259850	2016
FCU5	259871	2016
FCU5	259963	2016
FCU5	259986	2016
FCU5	260309	2016
FCU5	260357	2016
FCU5	260382	2016
FCU5	260383	2016
FCU5	402652	2016
FCU6	262165	2019
FCU6	264967	2019
FCU6	336351	2019
INDTK	289280	2015
INDTK	289813	2015
INDTK	365810	2015

Unit	Tag	Next Planned Maintenance Shutdown Date
INDTK	365811	2015
INDTK	365813	2015
ISOM	268623	2018
ISOM	268628	2018
ISOM	268648	2018
ISOM	268650	2018
ISOM	269456	2018
ISOM	269511	2018
ISOM	269517	2018
ISOM	269528	2018
ISOM	269579	2018
ISOM	269625	2018
ISOM	269626	2018
ISOM	269634	2018
ISOM	269981	2018
ISOM	269983	2018
ISOM	270018	2018
ISOM	270144	2018
ISOM	270168	2018
ISOM	270188	2018
ISOM	270355	2018
ISOM	270504	2018
ISOM	270506	2018
ISOM	270507	2018
ISOM	270714	2018
ISOM	270989	2018
ISOM	271292	2018
ISOM	271299	2018
ISOM	271726	2018
ISOM	271727	2018
ISOM	271728	2018
ISOM	271858	2018
ISOM	271860	2018
ISOM	271865	2018
ISOM	271871	2018
ISOM	280230	2018
ISOM	282492	2018
ISOM	282493	2018
ISOM	282495	2018
ISOM	282497	2018
ISOM	298996	2018

Unit	Tag	Next Planned Maintenance Shutdown Date
ISOM	302621	2018
ISOM	303402	2018
ISOM	303417	2018
ISOM	303869	2018
ISOM	310218	2018
ISOM	310278	2018
ISOM	310279	2018
ISOM	310293	2018
ISOM	310351	2018
ISOM	310368	2018
ISOM	310374	2018
ISOM	310375	2018
ISOM	310377	2018
ISOM	314237	2018
ISOM	319139	2018
ISOM	334097	2018
ISOM	349231	2018
ISOM	350539	2018
ISOM	350543	2018
ISOM	361926	2018
ISOM	362029	2018
ISOM	368542	2018
ISOM	368877	2018
ISOM	368878	2018
ISOM	369949	2018
ISOM	371602	2018
ISOM	371729	2018
ISOM	371877	2018
ISOM	371896	2018
ISOM	371931	2018
ISOM	371955	2018
ISOM	371999	2018
ISOM	373040	2018
ISOM	373352	2018
ISOM	375241	2018
JLTK	272375	2015
JLTK	272776	2015
JLTK	273855	2015
JLTK	274850	2015
JLTK	275502	2015
JLTK	280532	2015

Unit	Tag	Next Planned Maintenance Shutdown Date
JLTK	280996	2015
JLTK	281318	2015
JLTK	282990	2015
JLTK	338533	2015
JLTK	363291	2015
JLTK	368219	2015
JLTK	368309	2015
JLTK	401208	2015
LKGTK	296159	2016
NSU	370272	2016
NSU	370273	2016
NSU	370343	2016
NSU	370588	2016
NSU	370789	2016
NSU	370791	2016
NSU	370841	2016
NSU	370864	2016
NSU	370894	2016
NSU	371185	2016
OMDN	344351	2015
OMDN	346406	2015
OMDN	347149	2015
OMDN	347366	2015
OMDN	347431	2015
OMDN	347763	2015
OMDN	349654	2016
OMDN	349890	2015
OMDN	350133	2015
OMDN	353891	2016
OMDN	356973	2020
OMDN	357215	2015
OMDN	357531	2015
OMDN	375707	2015
OMDN	402934	2015
OMDN	403523	2015
OMDN	418017	2015
OMDN	418020	2015
PCU	302119	2019
PCU	302138	2019
PCU	313385	2019
PCU	313482	2019

Unit	Tag	Next Planned Maintenance Shutdown Date
PCU	313490	2019
PCU	369938	2019
PCU	369946	2019
PCU	373443	2019
PCU	375242	2019
STK	280285	2015
STK	280872	2015
STK	283645	2015
STK	285422	2015
STK	285423	2015
STK	285426	2015
STK	285428	2015
STK	285437	2015
STK	285441	2015
STK	285668	2015
STK	286313	2015
STK	286318	2015
STK	286912	2015
STK	286916	2015
STK	286917	2015
STK	286918	2015
STK	286919	2015
STK	291575	2015
STK	291612	2015
STK	295193	2015
STK	297143	2015
STK	298195	2015
STK	298234	2015
STK	298594	2015
STK	298713	2015
STK	298764	2015
STK	298765	2015
STK	299311	2015
STK	299352	2015
STK	299728	2015
STK	299799	2015
STK	300140	2015
STK	300491	2015
STK	300497	2015
STK	309675	2015
STK	309693	2015

Unit	Tag	Next Planned Maintenance Shutdown Date
STK	310700	2015
STK	310979	2015
STK	311567	2015
STK	311790	2015
STK	315306	2015
STK	351315	2015
STK	358009	2015
STK	358208	2015
STK	367247	2015
STK	367627	2015
STK	372262	2015
STK	372263	2015
STK	373769	2015
STK	373776	2015
STK	373800	2015
STK	373882	2015
STPTK	324370	2015
VRU1	262252	2018
VRU1	262253	2018
VRU1	263044	2018
VRU1	263172	2018
VRU1	263442	2018
VRU1	263714	2018
VRU1	264257	2018
VRU1	264345	2018
VRU1	272844	2018
VRU1	272862	2018
VRU1	273235	2018
VRU1	325451	2018
VRU1	352650	2018
VRU1	353095	2018
VRU1	358841	2018
VRU1	375101	2018
VRU1	375109	2018
VRU1	398528	2018
VRU1	403698	2018
VRU2	256122	2016
VRU2	256652	2016
VRU2	256937	2016
VRU2	257068	2016
VRU2	257173	2016

Unit	Tag	Next Planned Maintenance Shutdown Date
VRU2	257234	2016
VRU2	257343	2016
VRU2	257345	2016
VRU2	257462	2016
VRU2	257621	2016
VRU2	257838	2016
VRU2	258527	2016
VRU2	258590	2016
VRU2	260712	2016
VRU2	308010	2016
VRU2	328926	2016
VRU2	352049	2016
VRU2	358565	2016
VRU2	358600	2016
VRU2	362085	2016
VRU2	362132	2016
VRU2	363915	2016
VRU3	280112	2016
VRU3	281543	2016
VRU3	282558	2016
VRU3	287351	2016
VRU3	287445	2016
VRU3	287542	2016
VRU3	287543	2016
VRU3	288390	2016
VRU3	290532	2016
VRU3	295075	2016
VRU3	295556	2016
VRU3	295746	2016
VRU3	296788	2016
VRU3	299694	2016
VRU3	319314	2016
VRU3	348042	2016
VRU3	350952	2016
VRU3	352292	2016
VRU3	358703	2016
VRU3	368461	2016
VRU3	374322	2016
VRU3	374837	2016
VRU4	382876	2019
VRU4	393658	2019

Unit	Tag	Next Planned Maintenance Shutdown Date
VRU4	393767	2019
VRU4	393769	2019
VRU4	394282	2019
VRU4	394837	2019
VRU4	417923	2019

Attachment 1: Commercial Unavailability Documentation

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 1/17/2014
Document Revision #: 1

Information for Requested Valve / Packing:	Environmental Use Only:
Manufacturer: Valco Instruments	Exemption # (LLExempt-YR-XX): -14-02
Valve/Packing Type: (Multi) Port Diaphragm Valve	Exemption Review Due: 8/1/15
Size:	
Service: Sampling	Valve Certification Master Updated: Yes / No
Process Unit:	SAP Catalog Updated: Yes / No

Documentation of Manufacturers Contacted for Valve/Packing Substitute and Response

Please list all manufacturers contacted as producing an appropriate substitute valve/packing. (Consent Decree requires 3 manufacturers, where available) These manufacturers must send written documentation or equivalent documentation that they do not produce a substitution for the valve/packing requested. This documentation must be attached to this form.

1. According to the letter provided by Laura Hutchinson of Valco Instruments Co., Inc. (The valve manufacturer) – Valco Industries does not presently have any valves which are tested to the EPA's Fugitive Emissions specifications. They will be happy to implement such measures in the future but none are in place at this time. In addition, in further phone discussions with Laura, Valco Industries does not have a commercially available (LOW-E) ~~complaint~~ ^{compliant} valve to use as a direct replacement in this analyzer unit.

2. Fisher states Valco is the only manufacturer of these valves.

3.

If fewer than three manufacturers are contacted, one of the following reasons must be documented below and attached to this form for determining unavailability of safe and suitable certified low leaking valves/valve packing:

- Cannot meet valve or valve packing specifications identified by the WBU Valve Technical Authority
- Cannot meet the valve or valve packing manufacturer recommendations for the relevant process unit components
- Demonstrate that fewer than three vendors offer valves or valve packing technologies for the service and operating conditions of the valve or valve packing to be replaced

Reason:

This valve is an OEM designed injection port valve for use in the Flare CEM Total Sulfur Analyzers that was purchased from Thermo-Fisher prior to the Fugitive Emission program being instituted at BP Whiting. Its function is to inject sample & low range calibration/validation gas into the analyzer.

Certified Low Leak Valve / Packing is NOT AVAILABLE due to:

Please check applicable criteria and provide additional information requested.

√	Criteria	If Yes, provide:
	Valve/Packing Service/Operating Conditions	Service: Pressure (psig): Temperature (°F):
	Equipment Application	Location:
	Seal Performance	Describe:
	Service Life	Years:
	Packing Friction	Describe:
	Temperature and Pressure Limitations	Pressure (psig): Temperature (°F):
	Requires Retrofit (i.e. re-piping or space limitations)	Describe:
	Valve/packing specification identified by licensor of unit or equipment	Describe:
	Valve/packing vendor or	Describe:

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 1/17/2014
Document Revision #: 1

manufacturer recommendation for unit or unit components	
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If more space is needed, attach additional discussion.

Requestor: A minimum of 3 manufacturers have been contacted and certified low leak valve / packing is not commercially available for this service for the reasons described above. Signed: <i>Richard M. Sobilo</i> Date: <i>7/31/14</i>		
Valve Technical Authority Based on my review of the information provided, I approve the determination of commercial unavailability.	Engineering Authority Based on my review of the information provided, I approve the determination of commercial unavailability.	Environmental Manager Based on my review of the information provided, I approve the determination of commercial unavailability.
Signed / Date: richard.sobilo@bp.com <small>Digitally signed by richard.sobilo@bp.com DN: cn=richard.sobilo@bp.com Date: 2014.07.31 16:32:33 -05'00'</small>	Signed / Date: <i>8/12/14</i> <i>G.G. BALCERAK for C.J. Tilley</i> <i>(DOT) G.G. BALCERAK</i>	Signed / Date: linda.wilson2@bp.com <small>Digitally signed by linda.wilson2@bp.com DN: cn=linda.wilson2@bp.com Date: 2014.08.01 13:50:27 -05'00'</small>

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 8/6/12
Document Revision #: 0

Information for Requested Valve / Packing:	Environmental Use Only:
Manufacturer: <u>Inline Industries</u>	Exemption # (LLExempt-YR-XX): <u>-15-01</u>
Valve/Packing Type: <u>509F multi-port flanged ball valve. PTFE packing and body seals.</u>	Exemption Review Due: <u>3/10</u>
Size: <u>2"-150#</u>	
Service: <u>Nitrogen</u>	Valve Certification Master Updated: Yes / No
Process Unit: <u>CFHU</u>	SAP Catalog Updated: Yes / No

Documentation of Manufacturers Contacted for Valve/Packing Substitute and Response

Please list all manufacturers contacted as producing an appropriate substitute valve/packing. (Consent Decree requires 3 manufacturers, where available) These manufacturers must send written documentation or equivalent documentation that they do not produce a substitution for the valve/packing requested. This documentation must be attached to this form.

1. <u>Jim Gillespie – McJunkin – None of their normal vendors make 4-way ball valves</u>
2. <u>Jennifer Hoppe – McJunkin – Velan Ball Valve not available with 2"-150# connections</u>
3. <u>Michael Collings – Alco Valves – Do not make 4-way valve with flanged ends</u>

Certified Low Leak Valve / Packing is NOT AVAILABLE due to:

Please check applicable criteria and provide additional information requested.

<input checked="" type="checkbox"/> Criteria	If Yes, provide:
Valve/Packing Service/Operating Conditions	Service: Pressure (psig): Temperature (°F):
Equipment Application	Location:
<input checked="" type="checkbox"/> Seal Performance	Describe: <u>A 4-way diverter valve is not a fire safe valve per API 607 by design. This valve is being used to direct N2, which is not a fire safe application. A note will be declared on the AML for this valve to not be allowed for that application.</u>
Service Life	Years:
Packing Friction	Describe:
Temperature and Pressure Limitations	Pressure (psig): Temperature (°F):
<input checked="" type="checkbox"/> Requires Retrofit (i.e. re-piping or space limitations)	Describe: <u>We are performing a replace-in-kind on a 4-way valve in service for K-801B compressor in the CFHU. The valve was chosen to match the K-801A compressor, which is a nearly identical construction.</u>
Valve/packing specification identified by licensor of unit or equipment	Describe:
Valve/packing vendor or manufacturer recommendation for unit or unit components	Describe:



If more space is needed, attach additional discussion.

Requestor: A minimum of 3 manufacturers have been contacted and certified low leak valve / packing is not commercially available for this service for the reasons described above. Signed: <u>Will [Signature]</u>	Date: <u>3-10-15</u>
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Valve Technical Authority Based on my review of the information provided, I approve the determination of commercial unavailability.	Engineering Authority Based on my review of the information provided, I approve the determination of commercial unavailability.	Environmental Manager Based on my review of the information provided, I approve the determination of commercial unavailability.
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**WBU Valve/Packing Commercial Unavailability Assessment and
Documentation Form**

Document Number: EF1209.1
Document Revision Date: 8/6/12
Document Revision #: 0

Signed / Date:  Digitally signed by Sobilo, Richard Date: 2015.03.10 15:30:21 -05'00'	Signed / Date:  Digitally signed by tillemcj@bp.com Date: 2015.03.10 15:34:27 -05'00'	Signed / Date: linda.wilson2@bp.com Digitally signed by linda.wilson2@bp.com DN: cn=linda.wilson2@bp.com Date: 2015.03.10 17:06:38 -05'00'
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WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 1/17/2014
Document Revision #: 1

Information for Requested Valve / Packing:	Environmental Use Only:
Manufacturer: Jerguson	Exemption # (LLExempt-YR-XX): -15-02
Valve/Packing Type: Tubular Glass Gage Valve	Exemption Review Due:
Size: Varies	
Service: Varies	Valve Certification Master Updated: Yes / No
Process Unit: Varies	SAP Catalog Updated: Yes / No

Documentation of Manufacturers Contacted for Valve/Packing Substitute and Response

Please list all manufacturers contacted as producing an appropriate substitute valve/packing. (Consent Decree requires 3 manufacturers, where available) These manufacturers must send written documentation or equivalent documentation that they do not produce a substitution for the valve/packing requested. This documentation must be attached to this form.

1/Proquip - Dave Lefley quoted a Jerguson equivalent that is not (Low-E) compliant	4/1/15
2/Pinnacle Sales - Russ Harms quoted the Jerguson Type 56 gage valve that is not (Low-E) compliant	4/1/15
3/FCX Performance - Keith Blanchette quoted the Jerguson Type 56 gage valve that is not (Low-E) compliant	6/9/15

If fewer than three manufacturers are contacted, one of the following reasons must be documented below and attached to this form for determining unavailability of safe and suitable certified low leaking valves/valve packing:

- Cannot meet valve or valve packing specifications identified by the WBU Valve Technical Authority
- Cannot meet the valve or valve packing manufacturer recommendations for the relevant process unit components
- Demonstrate that fewer than three vendors offer valves or valve packing technologies for the service and operating conditions of the valve or valve packing to be replaced

Reason: Demonstrate that fewer than three vendors offer valves or valve packing technologies for the service and operating conditions of the valve or valve packing to be replaced.

Per the comments listed above, Procurement cannot find a vendor that is in compliance with (Low-E) regulations for this valve type.

Certified Low Leak Valve / Packing is NOT AVAILABLE due to:



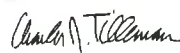
Please check applicable criteria and provide additional information requested.

Criteria	If Yes, provide:
Valve/Packing Service/Operating Conditions	Service: Pressure (psig): Temperature (°F):
Equipment Application	Location:
Seal Performance	Describe:
Service Life	Years:
Packing Friction	Describe:
Temperature and Pressure Limitations	Pressure (psig): Temperature (°F):
x Requires Retrofit (i.e. re-piping or space limitations)	Describe: Jerguson Tubular Glass Gage valves are specialized valves for gage glasses. A Low-E valve would require large re-piping scope and level indication changes
Valve/packing specification identified by licensor of unit or equipment	Describe:
Valve/packing vendor or manufacturer recommendation for unit or unit components	Describe:

If more space is needed, attach additional discussion.

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 1/17/2014
Document Revision #: 1

Requestor: A minimum of 2 manufacturers have been contacted and certified low leak valve / packing is not commercially available for this service for the reasons described above. Signed:  Digitally signed by Tenbusch, Gregory Date: 2015.06.03 07:42:32 -05'00' Date: _____		
<u>Valve Technical Authority</u> Based on my review of the information provided, I approve the determination of commercial unavailability.	<u>Engineering Authority</u> Based on my review of the information provided, I approve the determination of commercial unavailability.	<u>Environmental Manager</u> Based on my review of the information provided, I approve the determination of commercial unavailability.
Signed / Date:  6-15-15	Signed / Date:  tillemcj@bp.com 2015.06.17 07:48:19 -05'00'	Signed / Date: Wilson, Linda J Digitally signed by Wilson, Linda J DN: cn=Wilson, Linda J Date: 2015.06.19 08:48:17 -05'00'

Attachment 2: Revalidated Commercial Unavailability Documentation

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 1/17/2014
Document Revision #: 1

Information for Requested Valve / Packing:	Environmental Use Only:
Manufacturer: Williams	Exemption # (LLExempt-YR-XX): -13-08 R2014
Valve/Packing Type: Emergency Shut Off Swing Check Valve	Exemption Review Due: August 2015
Size: various	
Service: Butane, BB's (butane-butadine), Iso-butane	Valve Certification Master Updated: Yes / No
Process Unit: OMD STFA & CNTF	SAP Catalog Updated: Yes / No

Documentation of Manufacturers Contacted for Valve/Packing Substitute and Response

Please list all manufacturers contacted as producing an appropriate substitute valve/packing. (Consent Decree requires 3 manufacturers, where available) These manufacturers must send written documentation or equivalent documentation that they do not produce a substitution for the valve/packing requested. This documentation must be attached to this form.

1. Williams Valve Corporation (no other vendors located, see attached note)

If fewer than three manufacturers are contacted, one of the following reasons must be documented below and attached to this form for determining unavailability of safe and suitable certified low leaking valves/valve packing:

- Cannot meet valve or valve packing specifications identified by the WBU Valve Technical Authority
- Cannot meet the valve or valve packing manufacturer recommendations for the relevant process unit components
- Demonstrate that fewer than three vendors offer valves or valve packing technologies for the service and operating conditions of the valve or valve packing to be replaced

Reason:

Are unable to find any other valve manufacturers that make emergency shut off flanged check valves in the sizes we need. See attached.

Certified Low Leak Valve / Packing is NOT AVAILABLE due to:

Please check applicable criteria and provide additional information requested.

✓	Criteria	If Yes, provide:
	Valve/Packing Service/Operating Conditions	Service: Butane, BB's (butane-butadine), Iso-butane Pressure (psig): ~25 psig normally, 65 psig max (sphere RV set point) Temperature (°F): Ambient
X	Equipment Application	Location: Emergency shut off swing check valves on the fill and suction lines to and from spheres in STFA and CNTF. Used for emergency shut off only. During normal operation the flapper in the valve is being held up out of the flow path. The swing arm for the flapper extends through a gland to the outside of the valve where a fusible link connects it to a solenoid. Activation of the solenoid will cause it to release the link and drop the flapper. A fire burning through the fusible link will also cause the flapper to drop. Once the flapper has dropped the valve starts to behave like a normal check valve and will prevent liquid from leaving the sphere. Operation of solenoid is tested at least once a year by Maintenance as part of a PM.
	Seal Performance	Describe: Used for emergency shut off only.
	Service Life	Years: 10-20 years
	Packing Friction	Describe: N/A
	Temperature and Pressure Limitations	Pressure (psig): 65 psig max (sphere RV set point) Temperature (°F): 100 deg F max
	Requires Retrofit (i.e. re-piping or space limitations)	Describe: N/A
	Valve/packing specification identified by licensor of unit or equipment	Describe: As far as I can tell, emergency shut off swing check valves have been installed on all of the sphere fill/suction lines since they were built. They were also installed on the PGP bullets before that unit was decommissioned. If we were to replace them with a different type of ESO valve (i.e. gate, ball, etc) then you'd lose the current flexibility to flood the sphere after the valve has tripped (i.e. the check valve lets flow into the sphere but not out).

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 1/17/2014
Document Revision #: 1

X	Valve/packing vendor or manufacturer recommendation for unit or unit components	Describe: The original "Wheatley" brand valves are no longer manufactured. The Williams brand valves are the only ones found to provide the same functionality (solenoid and fusible link trip). Williams does not have the capability of testing for low emissions.
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If more space is needed, attach additional discussion.

Requester: A minimum of 3 manufacturers have been contacted and certified low leak valve / packing is not commercially available for this service for the reasons described above. Signed: <u>Karen E. Osenga</u> Date: <u>8/18/14</u>		
Valve Technical Authority Based on my review of the information provided, I approve the determination of commercial unavailability.	Engineering Authority Based on my review of the information provided, I approve the determination of commercial unavailability.	Environmental Manager Based on my review of the information provided, I approve the determination of commercial unavailability.
Signed / Date: <u>8-25-14</u> <u>Richard Suhle</u>	Signed / Date: <u>8/25/2014</u> <u>G.G. BALCERAK</u> <u>for C.J. Tilkens</u> (DDA)	Signed / Date: _____ <u>linda.wilson2@bp.com</u> Digitally signed by linda.wilson2@bp.com DN: cn=linda.wilson2@bp.com Date: 2014.08.27 11:03:14 -0500

Prior to asking for the renewal of this commercial unavailability variance I did another internet search for valves like these but again was unable to come up with another manufacturer who made valves like the ones we need to replace (i.e. flanged swing check with solenoid or fusible link activation).

McJunkin has also searched around their contacts and could not find us another vendor for these valves. Cameron currently owns the Wheatley brand of valves (which our old ESO check valves were) but they no longer make the emergency shut off type of swing check valves.

The only valve we found that matched our needs was the Williams valve.

Karen Osenga



WILLIAMS

Est. 1918

38-52 Review Ave. • Long Island City, NY 11101
(Phone) 718-392-1660 • (Fax) 718-729-5106

August 19, 2014

To whom it may concern.

RE: ESOV Valves

This letter is to confirm that Emergency Shut Off-Valves have not been tested for low emissions. At this point we would not classify these valves as low emissions.

Please feel free to contact us with any questions.

Best regards,

Glen Werthmuller
William E Williams Valve Corp.
38-52 Review Ave
Long Island City, NY 11101
Ph# 718-392-1660 ext. 216

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 8/6/12
Document Revision #: 0

Information for Requested Valve / Packing:	Environmental Use Only:
Manufacturer: Williams	Exemption # (LLExempt-YR-XX): -13-08b
Valve/Packing Type: Emergency Shut Off Swing Check Valve	Exemption Review Due: 07/29/14
Size: various	
Service: Butane, BB's (butane-butadine), Iso-butane	Valve Certification Master Updated: Yes / No
Process Unit: OMD STFA & CNTF	SAP Catalog Updated: Yes / No

Documentation of Manufacturers Contacted for Valve/Packing Substitute and Response

Please list all manufacturers contacted as producing an appropriate substitute valve/packing. (Consent Decree requires 3 manufacturers, where available) These manufacturers must send written documentation or equivalent documentation that they do not produce a substitution for the valve/packing requested. This documentation must be attached to this form.

1. Williams Valve Corporation (no other vendors located, see attached note)

Certified Low Leak Valve / Packing is NOT AVAILABLE due to:

Please check applicable criteria and provide additional information requested.

✓	Criteria	If Yes, provide:
	Valve/Packing Service/Operating Conditions	Service: Service: Butane, BB's (butane-butadine), Iso-butane Pressure (psig): ~25 psig normally, 65 psig max (sphere RV set point) Temperature (°F): Ambient
X	Equipment Application	Location: Emergency shut off swing check valve on the fill and suction lines to and from spheres in STFA and CNTF. Used for emergency shut off only. During normal operation the flapper in the valve is being held up out of the flow path. The swing arm for the flapper extends through a gland to the outside of the valve where a fusible link connects it to a solenoid. Activation of the solenoid will cause it to release the link and drop the flapper. A fire burning through the fusible link will also cause the flapper to drop. Once the flapper has dropped it will prevent liquid from leaving the sphere. Operation of solenoid is tested once a year by Maintenance as part of a PM.
	Seal Performance	Describe: Used for emergency shut off only.
	Service Life	Years: 10-20 years
	Packing Friction	Describe: N/A
	Temperature and Pressure Limitations	Pressure (psig): Temperature (°F):
	Requires Retrofit (i.e. re-piping or space limitations)	Pressure (psig): 65 psig max (sphere RV set point) Temperature (°F): 100 deg F max
	Valve/packing specification identified by licensor of unit or equipment	Describe: As far as I can tell, emergency shut off swing check valves have been installed on all of the sphere fill/suction lines since they were built. They were also installed on the PGP bullets before that unit was decommissioned.
X	Valve/packing vendor or manufacturer recommendation for unit or unit components	Describe: The original "Wheatley" brand valves are no longer manufactured. The Williams brand valves are the only ones found to provide the same functionality (solenoid and fusible link trip). Williams does not have the capability of testing for low emissions.

If more space is needed, attach additional discussion.

Requestor: A minimum of 3 manufacturers have been contacted and certified low leak valve / packing it not commercially available for this service for the reasons described above.

Signed: Karen E. Etter

Date: 8/12/13

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 8/6/12
Document Revision #: 0

<u>Valve Technical Authority</u> Based on my review of the information provided, I approve the determination of commercial unavailability.	<u>Engineering Authority</u> Based on my review of the information provided, I approve the determination of commercial unavailability.	<u>Environmental Manager</u> Based on my review of the information provided, I approve the determination of commercial unavailability.
Signed / Date: Digitally signed by Richard Sobilo, P.E. DN: cn=Richard Sobilo, P.E., o=BP Whiting Refinery, ou=Reliability Engineering, email=richard.sobilo@bp.com, c=US Date: 2013.08.14 13:19:59 -05'00'	Signed / Date:  Digitally signed by tillencj@bp.com Date: 2013.08.14 16:38:09 -05'00'	Signed / Date:  Digitally signed by linda.wilson2@bp.com DN: cn=linda.wilson2@bp.com Date: 2013.08.26 15:15:46 -05'00'

Although my Planning & Scheduling Supervisor Robert Budzowski and I did a thorough internet search for valves like these, we were unable to come up with another manufacturer who made valves like the ones we need to replace (i.e. swing check with solenoid or fusible link activation). McJunkin also searched around their contacts and could not find us another vendor for these valves.

An attempt was made to contact Cameron, who currently owns the Wheatley brand of valves, but they did not respond and their website does not show that they make the Wheatley emergency shut off type of swing check valves anymore.

The only valve we found that matched our needs was the Williams valve.

Karen Etter

Karen E. Etter

WILLIAM E.



WILLIAMS

VALVE CORPORATION

38-52 Review Avenue Long Island City, NY 11101 Phone: (718)392-1660, (800)221-1115 Fax: (718) 729-5106

Date: July 23, 2013

To Whom It May Concern,

This letter is to confirm that this valve: Williams 6" APSL-2 150# ANSI EMERGENCY SHUT OFF VALVE had not been tested of low-emissions. At this point we would not classify them as low-emissions valves.

Please feel free to contact us for any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andrew No.', is written over a horizontal line.

Andrew No
Technical Sales

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 8/6/12
Document Revision #: 0

Information for Requested Valve / Packing:	Environmental Use Only:
Manufacturer: <u>Jerguson</u>	Exemption # (LLExempt-YR-XX): <u>-13-09</u>
Valve/Packing Type: <u>Bonnet Valve w/ ball check, Braided Carbon Fiber</u>	Exemption Review Due: <u>9/24/14</u>
Valve Stem Packing: <u>- 4 rings</u>	
Size: <u>3/4" x 3/4" x 1/2"</u>	
Service: <u>Rich Amine, Hydrogen, Pure Hydrogen</u>	Valve Certification Master Updated: <u>Yes / No</u>
Process Unit: <u>CFHU</u>	SAP Catalog Updated: <u>Yes / No</u>

Documentation of Manufacturers Contacted for Valve/Packing Substitute and Response

Please list all manufacturers contacted as producing an appropriate substitute valve/packing. (Consent Decree requires 3 manufacturers, where available) These manufacturers must send written documentation or equivalent documentation that they do not produce a substitution for the valve/packing requested. This documentation must be attached to this form.

1.
2.
3.

Certified Low Leak Valve / Packing is NOT AVAILABLE due to:

Please check applicable criteria and provide additional information requested.

✓	Criteria	If Yes, provide:
	Valve/Packing Service/Operating Conditions	Service: <u>Rich Amine, Hydrogen, Pure Hydrogen</u> Pressure (psig): <u>1400</u> Temperature (°F): <u>120 F</u>
	Equipment Application	Location: <u>C-802 level Gauge @ CFHU</u>
	Seal Performance	Describe:
	Service Life	Years:
	Packing Friction	Describe:
	Temperature and Pressure Limitations	Pressure (psig): Temperature (°F):
	Requires Retrofit (i.e. re-piping or space limitations)	Describe:
	Valve/packing specification identified by licensor of unit or equipment	Describe:
	Valve/packing vendor or manufacturer recommendation for unit or unit components	Describe:

If more space is needed, attach additional discussion.

Requestor: A minimum of 3 manufacturers have been contacted and certified low leak valve / packing is not commercially available for this service for the reasons described above.

Signed: [Signature]

Date: 9/24/13

<p>Valve Technical Authority</p> <p>Based on my review of the information provided, I approve the determination of commercial unavailability.</p> <p>Signed / Date: <u>[Signature] 9-24-13</u></p>	<p>Engineering Authority</p> <p>Based on my review of the information provided, I approve the determination of commercial unavailability.</p> <p>Signed / Date: <u>[Signature]</u> Digitally signed by Tilleman, Charles J DN: cn=Tilleman, Charles J Date: 2013.09.24 15:35:16 -05'00'</p>	<p>Environmental Manager</p> <p>Based on my review of the information provided, I approve the determination of commercial unavailability.</p> <p>Signed / Date: <u>[Signature]</u> Digitally signed by Linda Wilson DN: cn=Linda Wilson Date: 2013.09.24 20:50:07 -05'00'</p>
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WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

Document Number: EF1209.1
Document Revision Date: 1/17/2014
Document Revision # 1

Information for Requested Valve / Packing:	Environmental Use Only:
Manufacturer: Valco Instruments	Exemption # (LLExempt-YR-XX): -14-01
Valve/Packing Type: 10 Port Diaphragm Valve	Exemption Review Due: March 2015
Size:	
Service: Sampling	Valve Certification Master Updated: Yes / No
Process Unit:	SAP Catalog Updated: Yes / No

Documentation of Manufacturers Contacted for Valve/Packing Substitute and Response

Please list all manufacturers contacted as producing an appropriate substitute valve/packing. (Consent Decree requires 3 manufacturers, where available) These manufacturers must send written documentation or equivalent documentation that they do not produce a substitution for the valve/packing requested. This documentation must be attached to this form.

1. According to the letter provided by Laura Hutchinson of Valco Instruments Co., Inc. (The valve manufacturer) – Valco Industries does not presently have any valves which are tested to the EPA's Fugitive Emissions specifications. They will be happy to implement such measures in the future but none are in place at this time. In addition, in further phone discussions with Laura, Valco Industries does not have a commercially available (LOW-E) complaint valve to use as a direct replacement in this analyzer unit.
2.
3.

If fewer than three manufacturers are contacted, one of the following reasons must be documented below and attached to this form for determining unavailability of safe and suitable certified low leaking valves/valve packing:

- o Cannot meet valve or valve packing specifications identified by the WBU Valve Technical Authority
- o Cannot meet the valve or valve packing manufacturer recommendations for the relevant process unit components
- o Demonstrate that fewer than three vendors offer valves or valve packing technologies for the service and operating conditions of the valve or valve packing to be replaced

Reason:

This valve is an OEM designed injection port valve for use in the Flare CEM Total Sulfur Analyzers that was purchased from Thermo-Fisher prior to the Fugitive Emission program being instituted at BP Whiting. Its function is to inject sample & low range calibration/validation gas into the analyzer.

Certified Low Leak Valve / Packing is NOT AVAILABLE due to:

Please check applicable criteria and provide additional information requested.

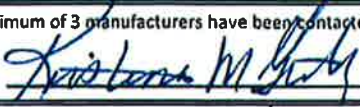


√	Criteria	If Yes, provide:
	Valve/Packing Service/Operating Conditions	Service: Pressure (psig): Temperature (°F):
	Equipment Application	Location:
	Seal Performance	Describe:
	Service Life	Years:
	Packing Friction	Describe:
	Temperature and Pressure Limitations	Pressure (psig): Temperature (°F):
	Requires Retrofit (i.e. re-piping or space limitations)	Describe:
	Valve/packing specification identified by licensor of unit or equipment	Describe: Valve is special built for analyzer manufacturer for this purpose.
	Valve/packing vendor or	Describe:

WBU Valve/Packing Commercial Unavailability Assessment and Documentation Form

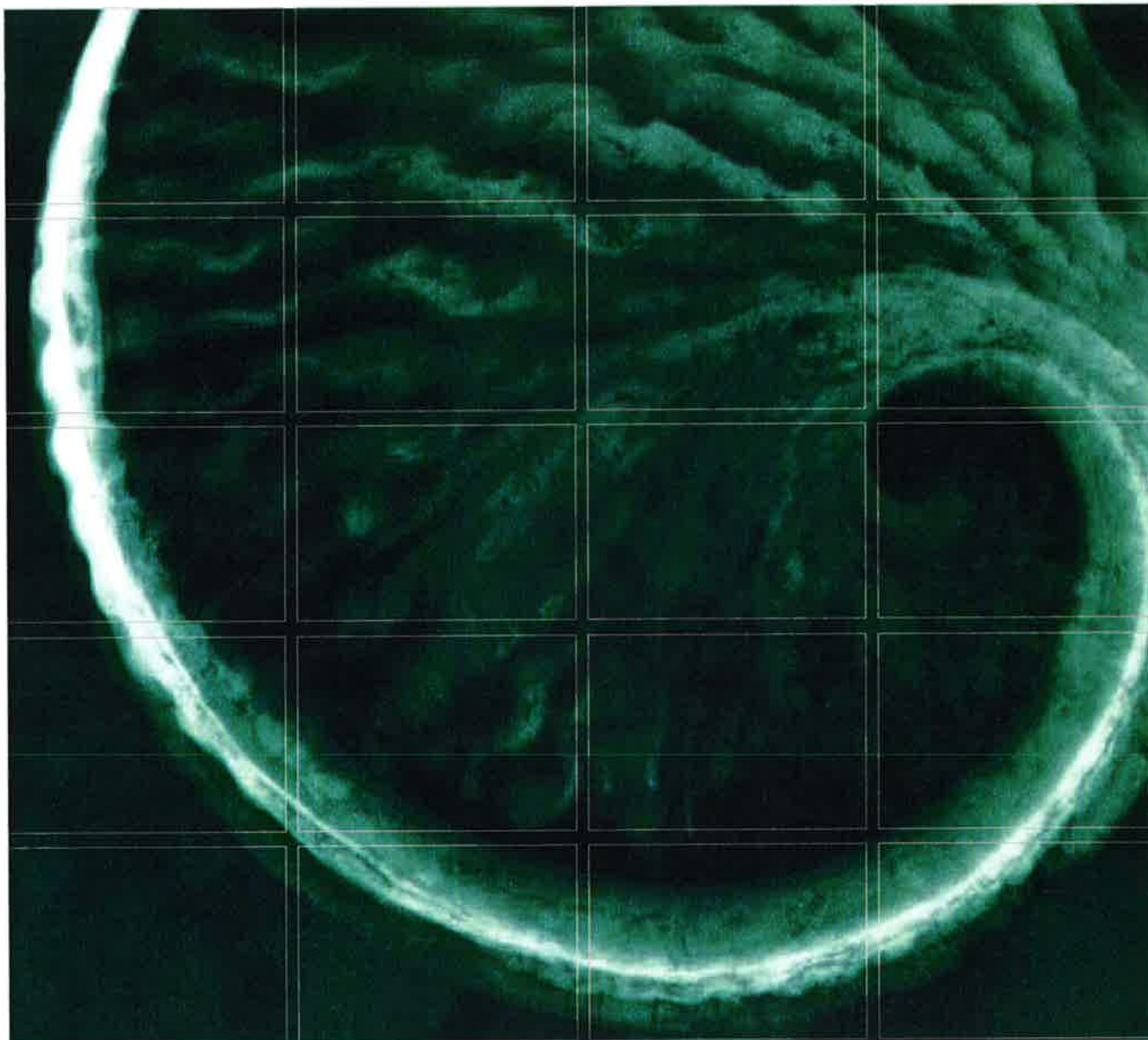
Document Number: EF1209.1
 Document Revision Date: 1/17/2014
 Document Revision #: 1

manufacturer recommendation for unit or unit components	
---	--

If more space is needed, attach additional discussion.

Requestor: A minimum of 3 manufacturers have been contacted and certified low leak valve / packing it not commercially available for this service for the reasons described above. Signed:  Date: 4/16/14		
Valve Technical Authority Based on my review of the Information provided, I approve the determination of commercial unavailability.	Engineering Authority Based on my review of the Information provided, I approve the determination of commercial unavailability.	Environmental Manager Based on my review of the information provided, I approve the determination of commercial unavailability.
Signed / Date: 	Signed / Date:  <small>Digitally signed by Tillman, Charles J DN: cn=Tillman, Charles J Date: 2014.04.25 16:43:17 -05'00'</small>	Signed / Date: linda.wilson2@bp.com m <small>Digitally signed by linda.wilson2@bp.com DN: cn=linda.wilson2@bp.com Date: 2014.04.25 16:22:52 -05'00'</small>

Attachment 3: LDAR Audit Summary Report



Prepared For:



***Third-Party LDAR Audit Report for
BP Products North America, Inc.,
Whiting Refinery, Whiting, Indiana***

*December 19, 2014
Environmental Resources Management (ERM)*

*75 Valley Stream Parkway, Suite 200
Malvern, PA 19355*

www.erm.com

The world's leading sustainability consultancy

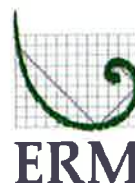


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1.0 EXECUTIVE SUMMARY

Environmental Resources Management, Inc. (ERM) was contracted by BP Products North America, Inc. (BP) to evaluate the compliance of the Whiting, Indiana refinery leak detection and repair (LDAR) program with applicable federal regulations and Consent Decree (CD) requirements. Specific findings are presented in Section 4.0 and Appendix A. With the exception of the findings presented in Appendix A, ERM found BP in compliance with the enhanced LDAR program (ELP) requirements identified in Section K, Paragraph 64 of the CD.

ERM identified findings related to the following general LDAR issues:

- Missed component monitoring interfaces on a valve and pump;
- No reasoning provided for certain difficult-to-monitor components;
- No U.S. EPA Method 21 response time test and daily calibration check records available for extension probe monitoring;
- Missed repair verification monitoring; and
- A comparative monitoring leak ratio greater than allowed under the CD.

Although the audit findings demonstrate areas for improvement in the refinery's LDAR program, it is important to note that most aspects of the current program were well performed. In particular, the monitoring analysis indicated that the refinery's technicians were spending an appropriate amount of time monitoring each component. Field observations from the refinery process units where comparative monitoring was conducted identified no open-ended lines and component tagging was observed to be in good condition.

2.0 INTRODUCTION

BP's Whiting, Indiana refinery is subject to a CD with the United States Environmental Protection Agency (EPA), which was entered on November 6, 2012. The CD contains air quality requirements and enhanced regulatory programs, including specific LDAR provisions. These provisions require mandatory biennial audits of the refinery LDAR program, which can alternate between third-party and internal. ERM was retained to conduct the 2014 third-party audit to assess the compliance status of operations at BP's Whiting, Indiana refinery, with requirements promulgated by the EPA and also the requirements of the CD. Specifically, the audit focused on the following requirements:

- 40 CFR 60, Subpart GGG and GGGa;
- 40 CFR 61 Subparts J and V;
- 40 CFR 63, Subpart CC;
- Indiana DEM LDAR requirements under 326 IAC 8-4-8; and
- The global settlement agreement between BP and U.S. EPA.

ERM performed the LDAR audit at the Whiting refinery from September 8 to 11, 2014. The audit team consisted of a three-person team from ERM, who worked on-site with direction from ERM's Project Manager, and remote assistance from another ERM audit team member and ERM's Partner-in-Charge. The review period for this audit was for two years, from September 1, 2012 through September 1, 2014.

This report summarizes the observations from the field activities associated with the audit process and the findings regarding compliance with applicable regulatory requirements based on the information gathered by ERM.

3.0 AUDIT METHODOLOGY

The objective of the third-party LDAR audit was to assess the Whiting refinery's program in comparison to LDAR requirements in the above identified regulation and CD and to categorize any areas of noncompliance with those requirements. To perform this review, the audit team evaluated the following program elements:

- Performing comparative monitoring;
- Reviewing records to ensure that calibration, monitoring, repairs, and component replacement and/or improvements were completed in the required periods and the appropriate documentation kept;
- Reviewing component identification procedures, tagging procedures, and data management procedures, including a field validation of equipment expected to be tagged and included in the program;
- Reviewing monitoring data and equipment counts (e.g., number of pieces of equipment monitored per day) for feasibility and unusual trends; and
- Observing the LDAR technicians' calibration and monitoring techniques.

Each of these elements is described below.

3.1 COMPARATIVE MONITORING

ERM personnel conducted 40 CFR Part 60, Appendix A, Method 21, "Determination of Volatile Organic Compound Leaks" monitoring of a representative selection of "normal to monitor" valves and pumps in the 12 Pipestill (12 PS), Isomerization (ISOM), and Propylene Concentration Unit (PCU) units at the refinery. Components identified as difficult or unsafe to monitor or those currently designated as delay of repair and require a process unit shutdown to be repaired were excluded from comparative monitoring.

To ensure a representative selection of components were monitored in each selected unit, ERM monitoring personnel chose components based on their knowledge and experience with assistance from refinery personnel as necessary to help delineate process unit boundaries. In this way, components were monitored in a semi-random manner along a specified route to ensure the entire footprint of the process unit was covered. Easily accessible components at ground level were primarily monitored with limited sampling of components up towers or platforms to ensure that a representative sample of components was monitored based on each unit's configuration. All component leaks identified during comparative monitoring were verified by refinery environmental technicians.

Comparative monitoring was conducted according to Appendix B, Paragraph 29 of the CD. A 500 parts per million by volume (ppmv) leak definition was utilized for valves and a 2,000 ppmv leak definition was utilized for pumps. Comparative monitoring results for a semi-random sample of all equipment measured an aggregate leak rate that ranged from 0.0 to 3.6 times the refinery's leak rate at the leak definitions identified above during the required two (2) monitoring periods for valves and twelve (12) monitoring periods prior to comparative monitoring, as identified in the Appendix B, Paragraph 29.b. of the CD.

The comparative monitoring leak rate for these units for all equipment was within accepted statistical tolerances according to the Comparative Monitoring Leak Ratio except for valve comparative monitoring in the 12 PS Unit. The statistical tolerance allowed for comparative monitoring is defined in Paragraph 31.a. of the CD as the Comparative Monitoring Leak Percentage divided by the refinery Historic Average Leak Percentage, being less than 3.0. An overall summary of the monitoring results for each equipment type is provided below in Tables 1 and 2. Graphical analysis of the comparative monitoring results for valves and pumps are also provided in Figures 1 and 2 at the end of this report. One regulatory finding was identified during the comparative monitoring portion of the audit from valve monitoring in 12 PS. The calculated Comparative Monitoring Leak Ratio was 3.6, greater than the 3.0 identified in Paragraph 31.a. in the CD, which requires BP to develop a corrective action plan (CAP).

However, it was noted that there is an amendment to the CD awaiting approval that would add a second criterion for development of a CAP, which would be a comparative monitoring audit leak percentage of 0.5% or greater. If this amendment is approved, a CAP would not be required as the comparative monitoring leak percentage is 0.2%. This CD change awaiting approval would align with the stipulated penalty provision in Paragraph 144.c. in the CD which assesses a penalty only if the comparative monitoring leak ratio is greater than 3.0 and the leak rate is greater than 0.5%.

Table 1 – Valve Monitoring Summary

Process Unit	No. Leaks & Components Comparative Monitored	Comparative Monitoring Leak Percentage	Comparative Monitoring Sample Size	Historic Average Leak Percentage	Comparative Monitoring Leak Ratio
12 PS	2/908	0.2%	18%	0.05%	3.6
ISOM	0/413	0.0%	14%	1.3%	0.0
PCU	1/197	0.5%	21%	0.7%	0.7

Note: The valve Historic Average Leak Percentage was based on the previous two periods or quarters of valve monitoring data.

Table 2 – Pump Monitoring Summary

Process Unit	No. Leaks & Components Comparative Monitored	Comparative Monitoring Leak Percentage	Comparative Monitoring Sample Size	Historic Average Leak Percentage	Comparative Monitoring Leak Ratio
12 PS	0/17	0.0%	50%	1.0%	0.0
ISOM	1/10	10%	53%	7.7%	1.3
PCU	0/6	0.0%	100%	10.8%	0.0

Note: The pump Historic Average Leak Percentage was based on the previous twelve periods or months of pump monitoring data.

3.2 RECORDS REVIEW

For this task, ERM reviewed records primarily from the refinery's LDAR database, hard copies of the refinery's Method 21 instrument calibration monitoring records, and any associated hard copy records in the form of written plans, delay of repair, and management of change records. ERM interviewed LDAR personnel and reviewed the refinery's documentation and information related to the following program elements:

- Routine required Method 21 and sensory monitoring to identify leaking equipment under each applicable leak definition;
- Consistency with difficult-to-monitor, unsafe-to-monitor, and no detectable emissions monitoring frequencies;
- Written difficult and unsafe-to-monitor plan;
- Documentation of the valve replacement and improvement program including implementation of modified purchasing procedures,

replacement or repacking of valves with screening levels greater than 5,000 ppmv, and appropriate recordkeeping and reporting;

- Execution of first and final repair attempts and re-monitoring within the appropriate timeframe, including tracking and documentation of repairs and unrepaired or leaking equipment;
- Documentation of delays of repair including associated justifications;
- Technician monitoring data to evaluate the survey speed based on the size of the component relative to its location and the response time of the monitoring instrument;
- Documentation of applicable requirements in the refinery's written LDAR Plan;
- Review of documentation regarding the management of change (MOC) program to ensure equipment added or removed from the refinery is evaluated to determine if it is subject to LDAR requirements and are integrated or removed from the program;
- Instrument calibration records (daily calibrations and calibration drift checks, calibration precision tests, response time tests, and calibration gas certifications); and
- Repair records and work orders.

ERM also utilized previous periodic reports in conjunction with the refinery's LDAR database to evaluate whether the environmental technicians are monitoring at the prescribed frequencies under the applicable requirements.

The refinery's current methods for electronic monitoring, storing, and reporting of LDAR data were additionally reviewed. For the required systems examination, ERM reviewed the refinery's methods for populating component information, monitoring data, repair information, and other necessary LDAR data into the database to facilitate semiannual reporting and satisfy the various federal and CD LDAR recordkeeping requirements. A summary of findings from the records review portion of the audit are listed in Appendix A of this audit report.

3.3 TAGGING REVIEW

As part of this task, the audit team performed a comprehensive field review of a representative sample of LDAR-affected components to determine if refinery equipment has been properly "identified" (e.g., by tagging or marking) and included in the refinery's periodic monitoring program in the units where comparative monitoring was conducted. Resources consulted while performing this review included the LDAR program database and knowledgeable refinery

personnel. If an LDAR affected component was identified as having not been properly tagged or marked, the audit team would cross-check the results of its tagging review against the refinery's applicability documentation and equipment lists generated from the refinery's LDAR database.

An effort was made by the audit team performing the tagging review and comparative monitoring to identify open-ended lines (OELs) that were not properly plugged or double-blocked and auditory, visual, or olfactory indications of leaks (AVOs) that had not been identified. No AVO leaks or OELs were identified during the tagging review.

3.4 OBSERVATION OF TECHNICIANS' CALIBRATION AND MONITORING TECHNIQUES

ERM observed instrument calibration certification (i.e., response time and calibration precision tests) and equipment leak monitoring performed by the site's fugitive monitoring technicians to evaluate whether these elements are being conducted in the manner prescribed in 40 CFR Part 60, Appendix A, Method 21, "Determination of Volatile Organic Compound Leaks" and related guidance documents. Refinery environmental technicians perform LDAR monitoring. During this audit, ERM observed the calibration techniques and procedures and monitoring techniques of nine (9) environmental technicians. As part of this task, the audit team conducted the following activities:

- Witnessed the required calibration techniques, including the precision test, response time test, daily calibrations, and verified that the correct instrument and calibration gases were utilized;
- Observed the measurement techniques used by the monitoring personnel, including the sample collection procedures, including consideration of factors such as probe positioning and collection duration, and equipment operation and on-site equipment maintenance. For both LDAR technicians, the monitoring of various types of components, such as gate valves, control valves, pumps, etc., was observed; and
- Assessed data collection and reporting by the environmental technicians, data acquisition techniques, and calibration and monitoring records.

The audit team relied upon guidance from the EPA Technical Assistance Document: *Training and Certification of EPA Method 21 Operators*, the EPA Inspection Manual: *Federal Equipment Leak Regulations for the Chemical Manufacturing Industry*, and ERM auditors' knowledge and experience. ERM also reviewed the documentation associated with these evaluations, including current and recent historical performance test, daily calibration, and calibration gas certification records. A summary of findings from the technician

observations conducted as part of the audit are listed in Appendix A of this report.

4.0 FINDINGS

The audit findings are listed in Appendix A attached to this report, and include the applicable citation(s) and regulatory requirements. With the exception of findings identified in Appendix A, ERM found BP in compliance with the enhanced LDAR program (ELP) requirements identified in Section K, Paragraph 64 of the CD.

The findings presented in this report represent ERM's professional interpretation and judgment of existing conditions based on review of available records, field inspections and verbal interviews with site personnel. Unless explicitly stated as such, ERM makes no warranties, expressed or implied. Regulatory interpretation given herein is provided by a technical person rather than by an attorney-at-law.

Figures

Figure 1 – Valve Leak Rate Comparison Figure

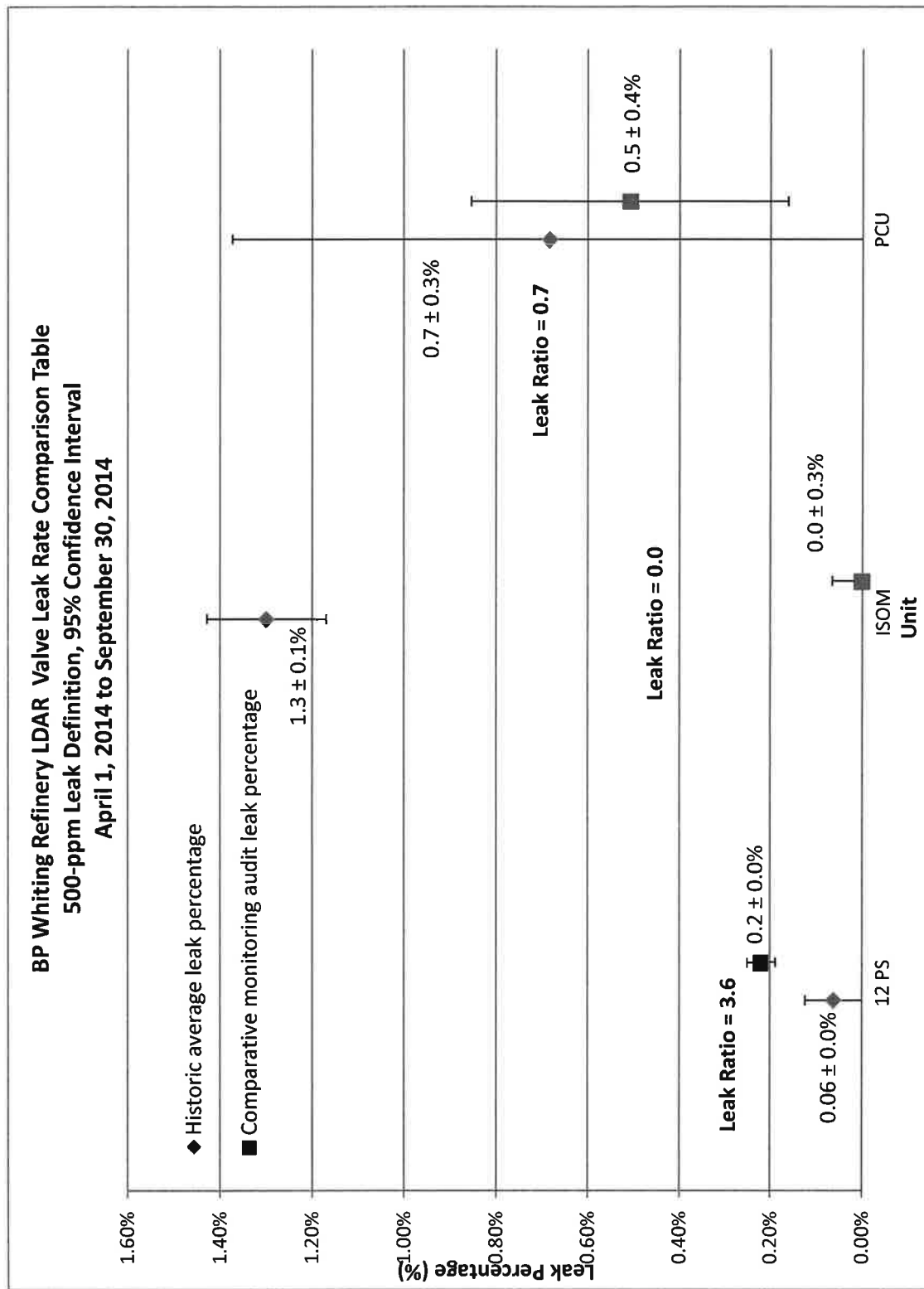
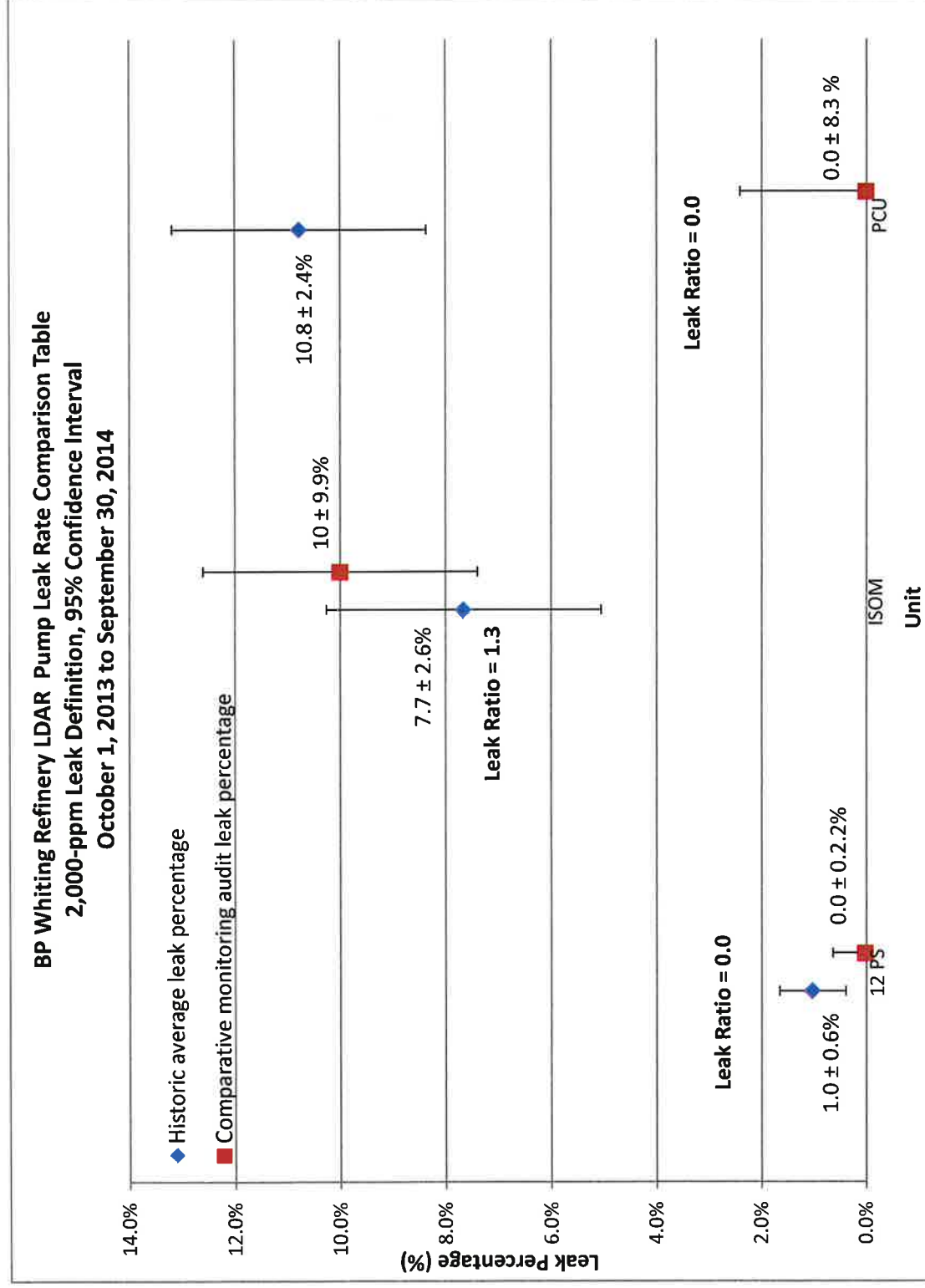


Figure 2 – Pump Leak Rate Comparison Figure



Appendix A
Audit Findings Table

APPENDIX A

**2014 Leak Detection and Repair Compliance Audit Findings
BP Products North America, Inc.
Whiting, Indiana**

No.	Regulatory Citation	Finding	Recommended Corrective Action
1	40 CFR §60.482-7a(c)(1): Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected. (2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.	Records indicated that follow-up monitoring of one (1) repaired valve was not consistently conducted for the two successive months after final repair. Records also noted that one (1) valve was not consistently monitored monthly while on delay of repair.	Reconcile scheduled re-monitoring events at the end of each month and each quarter to identify if components have not been monitored according to their scheduled frequencies.
2	40 CFR §60.485a(b)(1): Method 21 shall be used to determine the presence of leaking sources. 40 CFR 60 Appendix, U.S. EPA Method 21, Section 8.3.1.3: Valves. The most common source of leaks from valves is the seal between the stem and housing. Place the probe at the interface where the stem exits the packing gland and sample the stem circumference. Also, place the probe at the interface of the packing gland take-up flange seat and sample the periphery. In addition, survey valve housings of multipart assembly at the surface of all interfaces where a leak could occur.	During observations of technician monitoring techniques, the audit team observed that three (3) out of nine (9) environmental technicians did not monitor three (3) potential leak interfaces on three (3) valves, which included the gasket seams on a ball valve, the stem on a needle valve, and the bottom plug on a control valve. This resulted in three (3) missed valve monitoring interfaces out of a total of approximately 170 valve interfaces (2%) observed during technician observations.	Provide refresher training to LDAR monitoring technicians on EPA Method 21 monitoring requirements, emphasizing equipment leak interfaces to monitor.
3	40 CFR §60.485a(b)(1): Method 21 shall be used to determine the presence of leaking sources. The instrument shall be calibrated before use each day of its use by the procedures specified in Method 21 of appendix A-7 of this part. Method 21, Section 8.1.3: Response Time. The response time test is required before placing the instrument into service. If a modification to the sample pumping system or flow configuration is made that would change the response time, a new test is required before further use. Method 21, Section 10.1 Calibrate the VOC monitoring instrument as follows. After the appropriate warmup period and zero internal calibration procedure, introduce the calibration gas into the instrument sample probe. Adjust the instrument meter readout to correspond to the calibration gas value.	Daily calibration records indicate that monitoring technicians utilize extension probes when performing daily monitoring activities. However, no records are available for separate response time tests or daily calibration checks on days when extension probes were used by various monitoring technicians.	Conduct refresher training for LDAR monitoring technicians on EPA Method 21 response time test requirements for changes in instrument configurations. Consider displaying the calibration steps and EPA Method 21 above the table on which calibrations are performed.
4	40 CFR §60.486a(c): When each leak is detected as specified in §60.482-2a, 60.482-3a, 60.482-7a, 60.482-8a, 60.482-11a, and 60.483-2a, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location: (6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.	The justification for delay of repair for one component was not signed within 15 days of the leak.	Sign the delay of repair documentation before the 15th day following a leak exceeding the regulatory definition.
5	40 CFR §60.486a(f): The following information pertaining to all valves subject to the requirements of §60.482-7a(g) and (h), all pumps subject to the requirements of §60.482-2a(g), and all connectors subject to the requirements of §60.482-11a(e) shall be recorded in a log that is kept in a readily accessible location: (2) A list of identification numbers for valves that are designated as difficult-to-monitor, an explanation for each valve stating why the valve is difficult-to-monitor, and the schedule for monitoring each valve.	Approximately 20% of the valves the refinery had designated as difficult to monitor (DTM) did not specify a reason in the LDAR database.	Update the database to ensure that all DTM valves have a reason specified.
6	Appendix B, Part G, Paragraph 19 d. of the CD: d. Replacing or Repacking Existing Valves that have Screening Values At or Above 5,000 ppm. Except as provided in Paragraph 20, for each existing Valve in each Covered Process Unit that has a Screening Value at or above 5,000 ppm during any monitoring event, BPP shall replace or repack the Existing Valve with a Certified Low-Leaking Valve or with Certified Low-Leaking Valve Packing Technology. BPP shall undertake this replacement or repacking by no later than 30 days after the monitoring event that triggers the replacement or repacking requirement, unless the replacement or repacking requires a process unit shutdown.	One record indicates that a valve was not placed on the Low-E delay of repair list within 30 days.	Before the 30th day following a leak requiring valve replacement, review the delay of repair documentation with the Operations Supervisor whose decision it is to delay repair. Provide refresher training to LDAR personnel on federal and state DOR requirements.
7	Appendix B, Part J, Paragraph 29 a. of the CD: Calculating a Comparative Monitoring Audit Leak Percentage. Covered Equipment, excluding pumps and valves in heavy liquid service, shall be monitored to calculate a leak percentage for each Covered Process Unit broken down by Covered Equipment type (i.e., valves and pumps). The monitoring that takes place during the audit shall be called "comparative monitoring" and the leak percentages derived from the comparative monitoring shall be called the "Comparative Monitoring Audit Leak Percentage." Until termination of this Consent Decree, BPP shall conduct a comparative monitoring audit pursuant to this Paragraph during each LDAR audit. Each Covered Process Unit at the Whiting Refinery that is not the subject of the current audit shall have a comparative monitoring audit at least once before a previously-audited Covered Process Unit is audited again.	Comparative monitoring results of valves in the 12PS Unit covered process unit measured a Comparative Monitoring Leak Ratio of 3.6 times the refinery's historic average leak percentage from prior periodic monitoring events at a 500-ppm leak definition during the previous two monitoring periods, a margin that exceeds the 3.0 Comparative Monitoring Leak Ratio Limit identified in Paragraph 31.a. The Comparative Monitoring Leak Ratio was less than 3.0 in the two other units surveyed.	Provide refresher training to LDAR monitoring technicians on EPA Method 21 requirements, emphasizing that twice the response time is the minimum sampling time consistent with the method's intent to identify equipment leaks. Prepare a corrective action plan (CAP) per requirements outlined in Appendix B, Paragraph 31 of the CD. <i>Note there is a amendment to the CD awaiting approval that would add a second criterion for development of a CAP, which would be a comparative monitoring audit leak percentage of 0.5% or greater. If this amendment is approved, a CAP would not be required as the comparative monitoring leak percentage is 0.2%. This CD change awaiting approval would align with the stipulated penalty provision in Paragraph 144.c. in the CD which assesses a penalty only if the comparative monitoring leak ratio is greater than 3.0 and the leak rate is greater than 0.5%.</i>